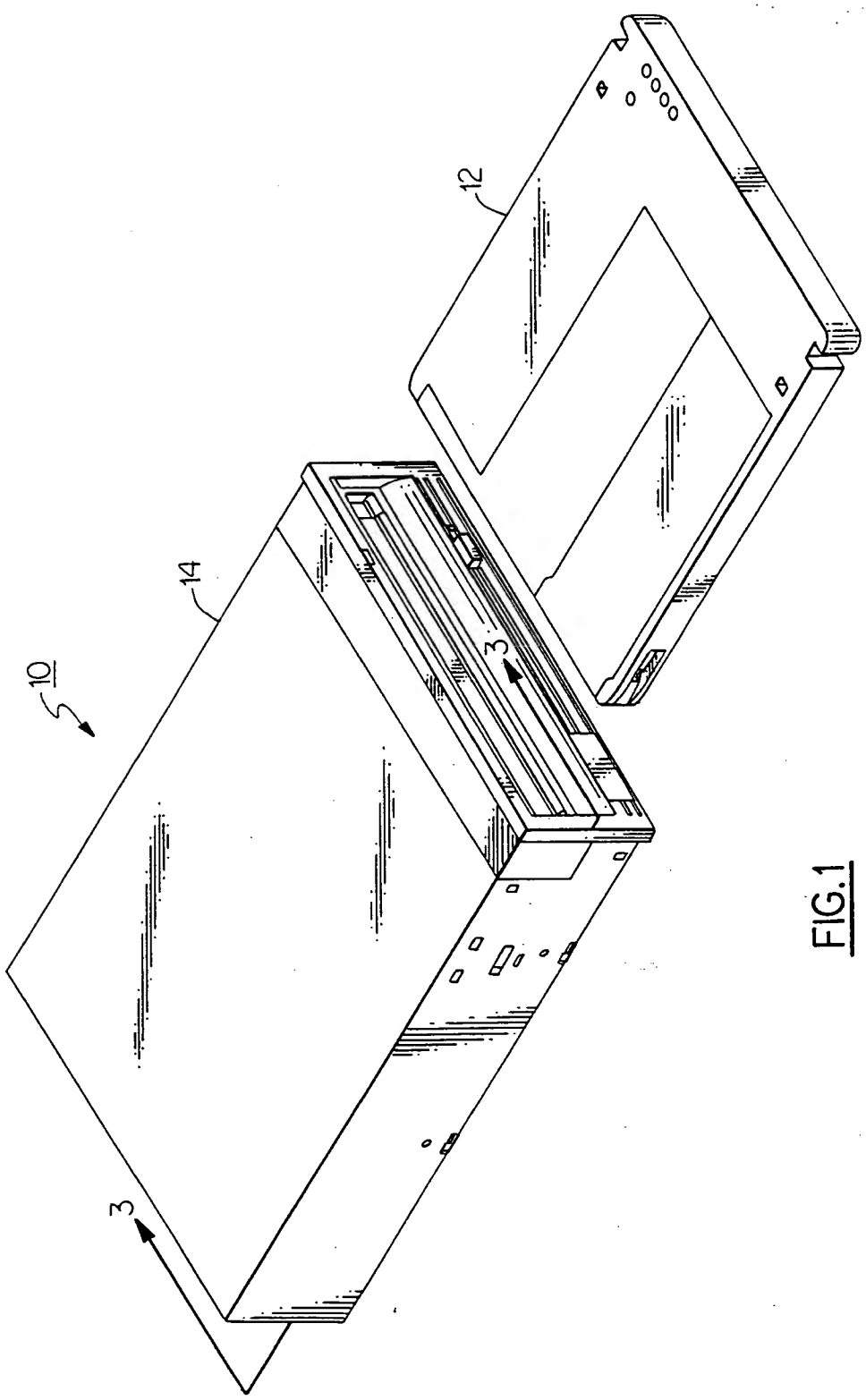


FIG.1

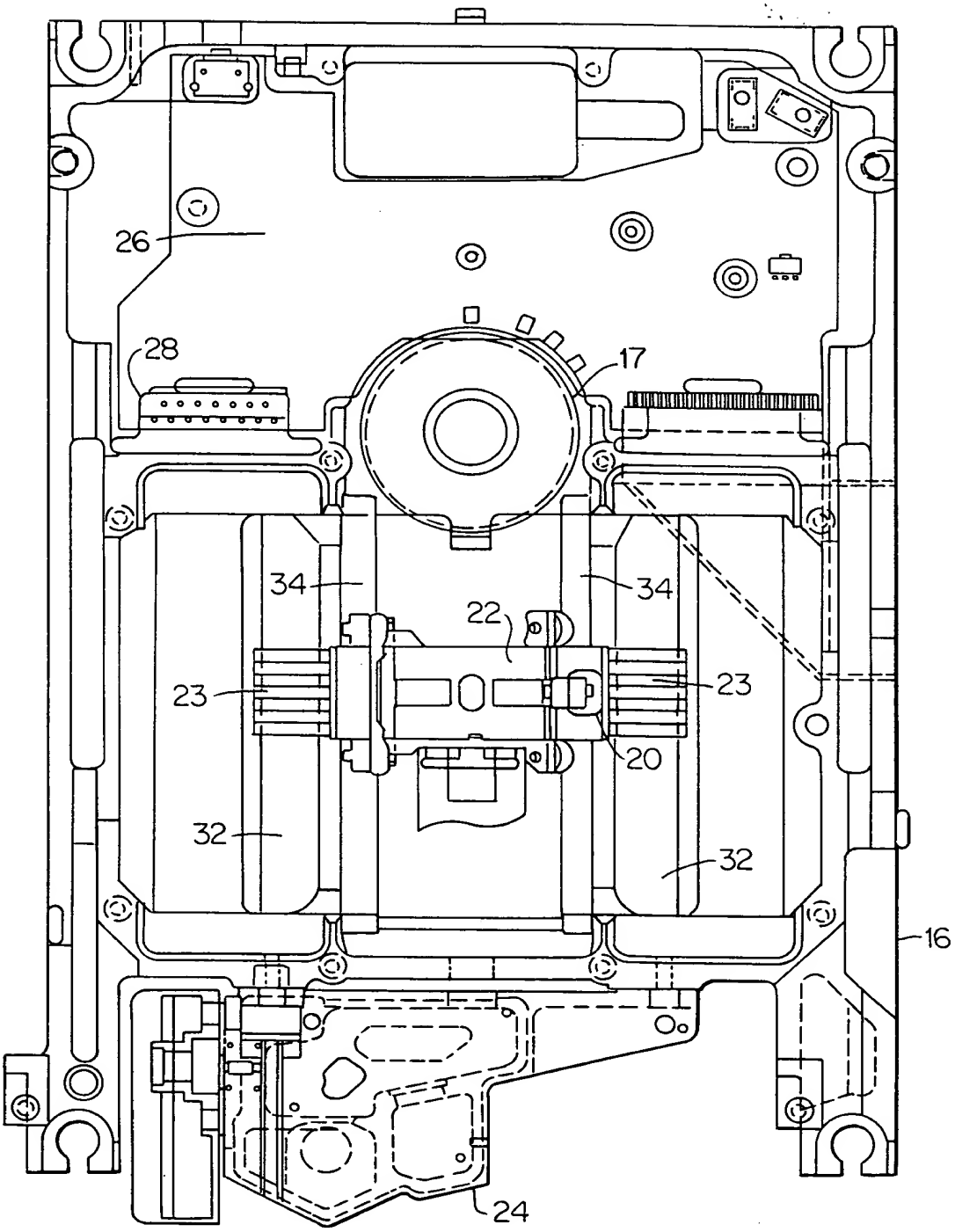


FIG.2

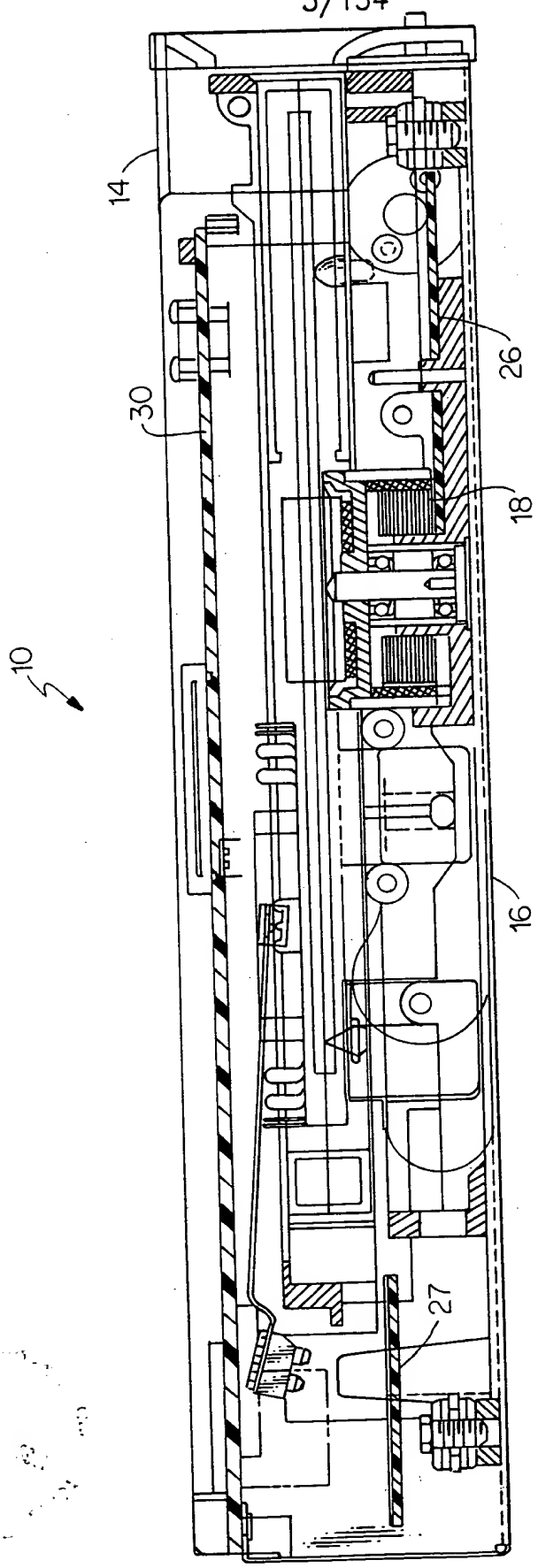
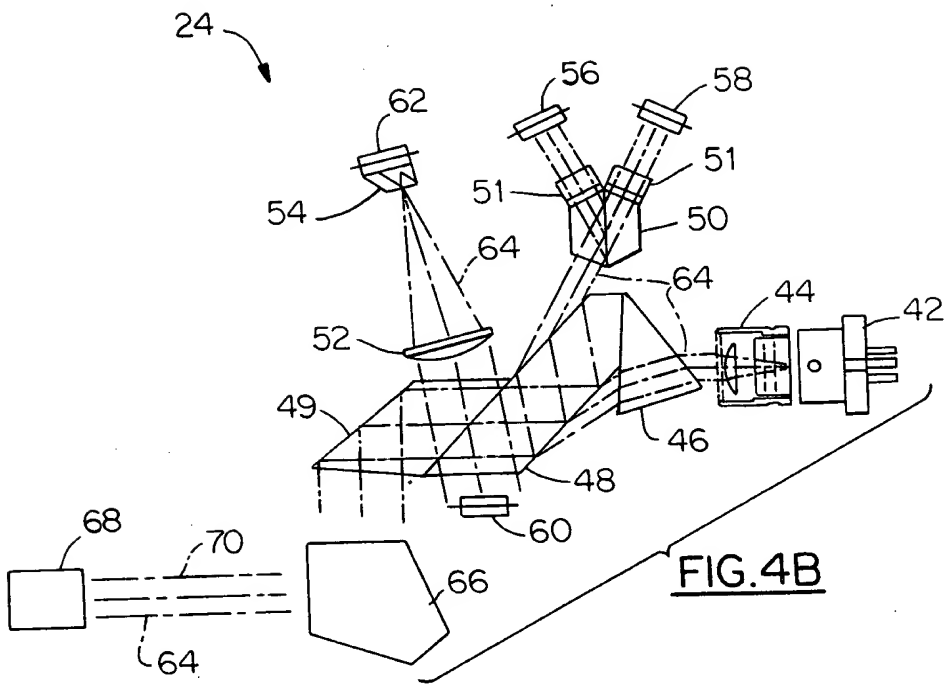


FIG.3


24
62
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44
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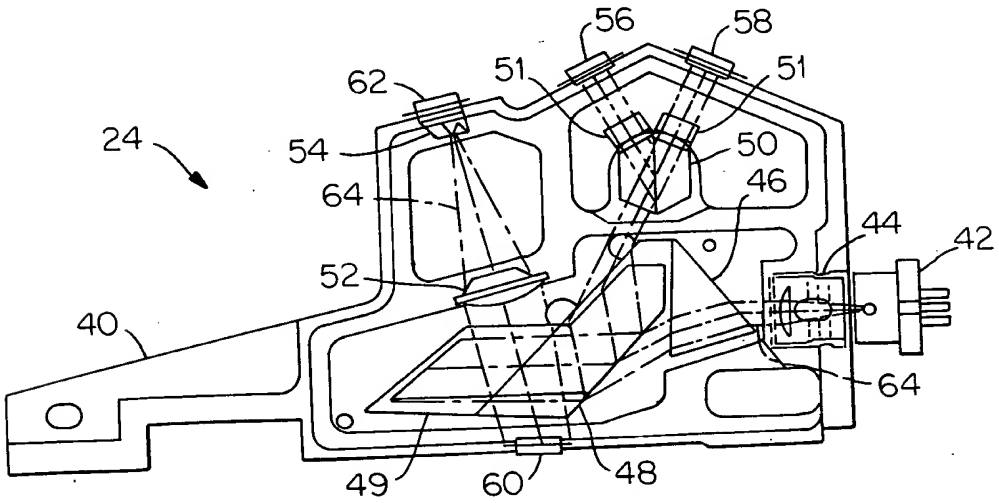
48
60
68
70
66
64

FIG.4B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52
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64
49
60
48

FIG.4A

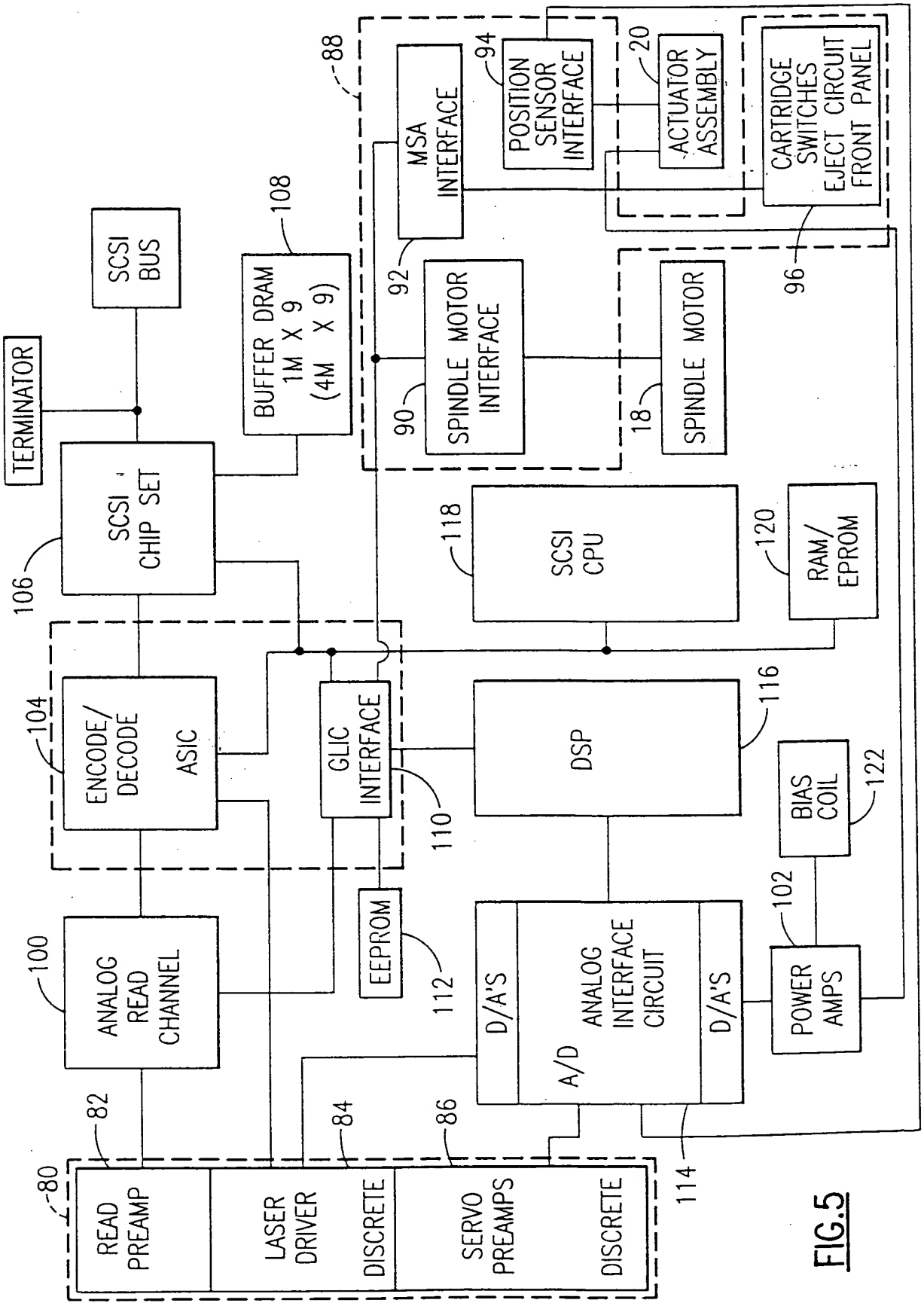
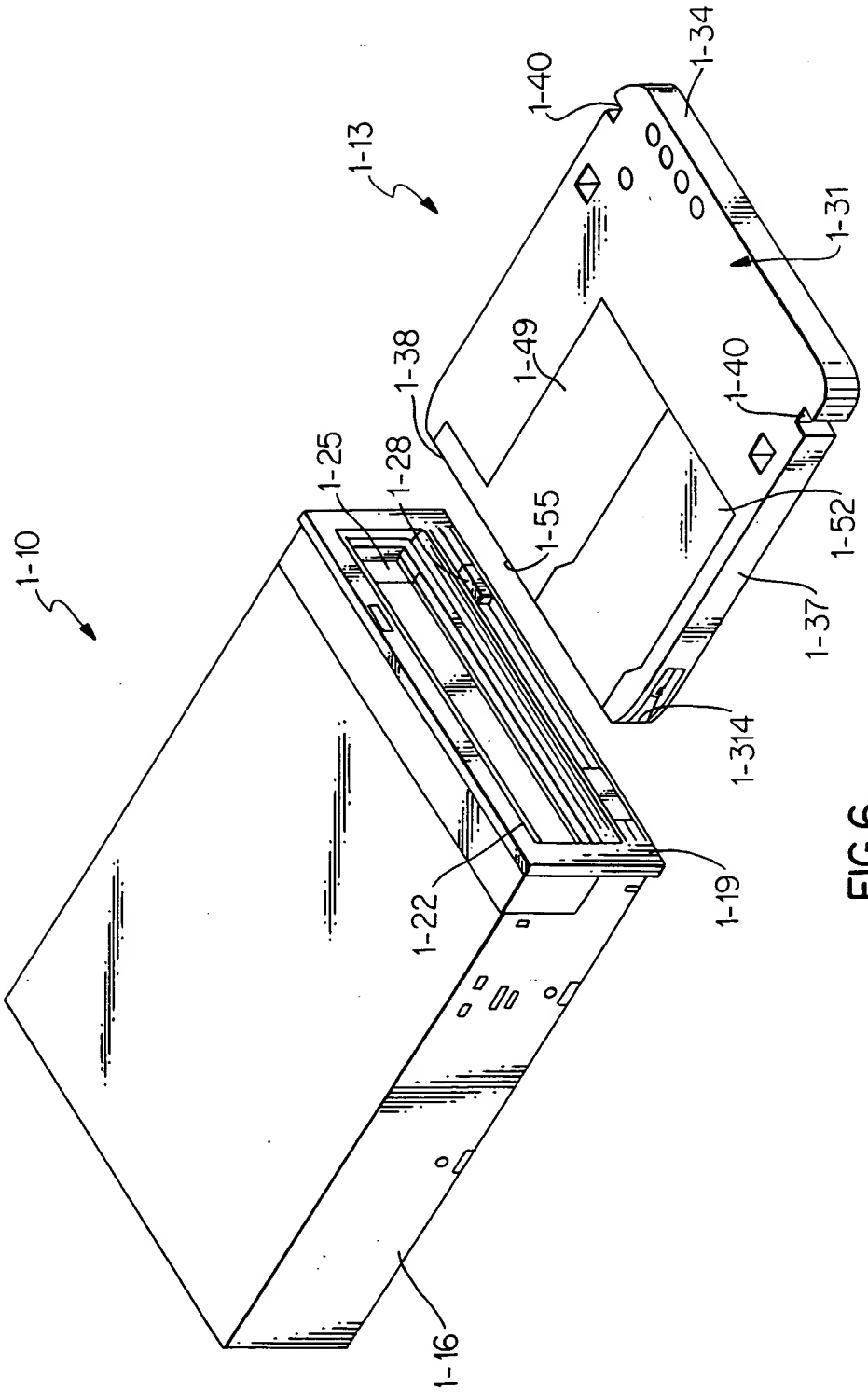

SCSI BUS
TERMINATOR
SCSI CHIP SET
106
BUFFER DRAM 1M X 9 (4M X 9)
108
88
MSA INTERFACE
92
POSITION SENSOR INTERFACE
94
ACTUATOR ASSEMBLY
20
CARTRIDGE SWITCHES EJECT CIRCUIT FRONT PANEL
96
SPINDLE MOTOR INTERFACE
90
SPINDLE MOTOR
18
SCSI CPU
118
RAM/ EPROM
120
ENCODE/ DECODE ASIC
104
GLIC INTERFACE
110
DSP
116
BIAS COIL
122
ANALOG READ CHANNEL
100
EEPROM
112
D/A'S
A/D
ANALOG INTERFACE CIRCUIT
D/A'S
102
POWER AMPS
80
82
84
86
114
READ PREAMP
LASER DRIVER
DISCRETE
SERVO PREAMPS
DISCRETE

FIG.5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1-19
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1-25
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1-38
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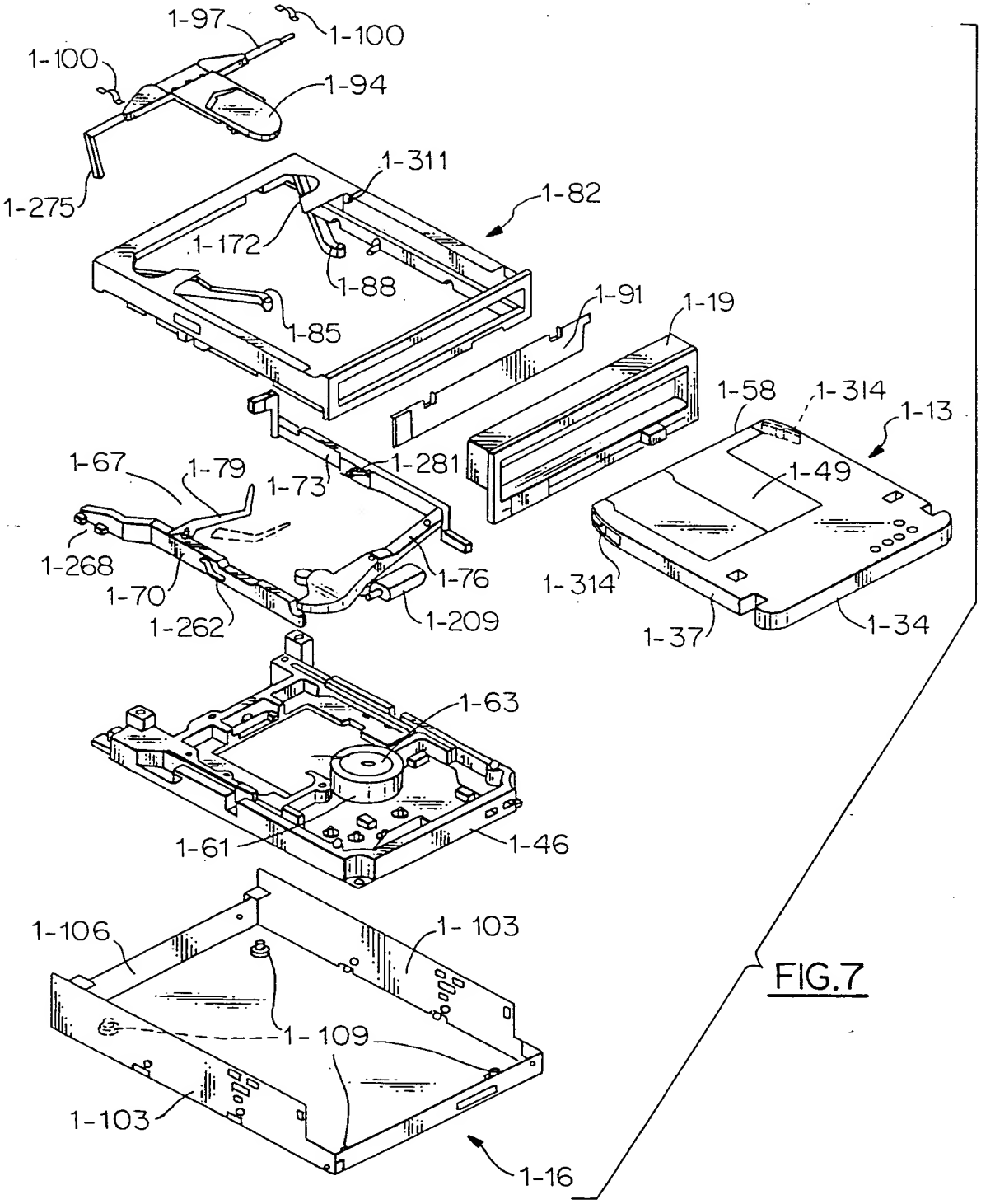
1-40
1-49
1-52
1-55
1-314

FIG.6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1-100
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1-13
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1-76
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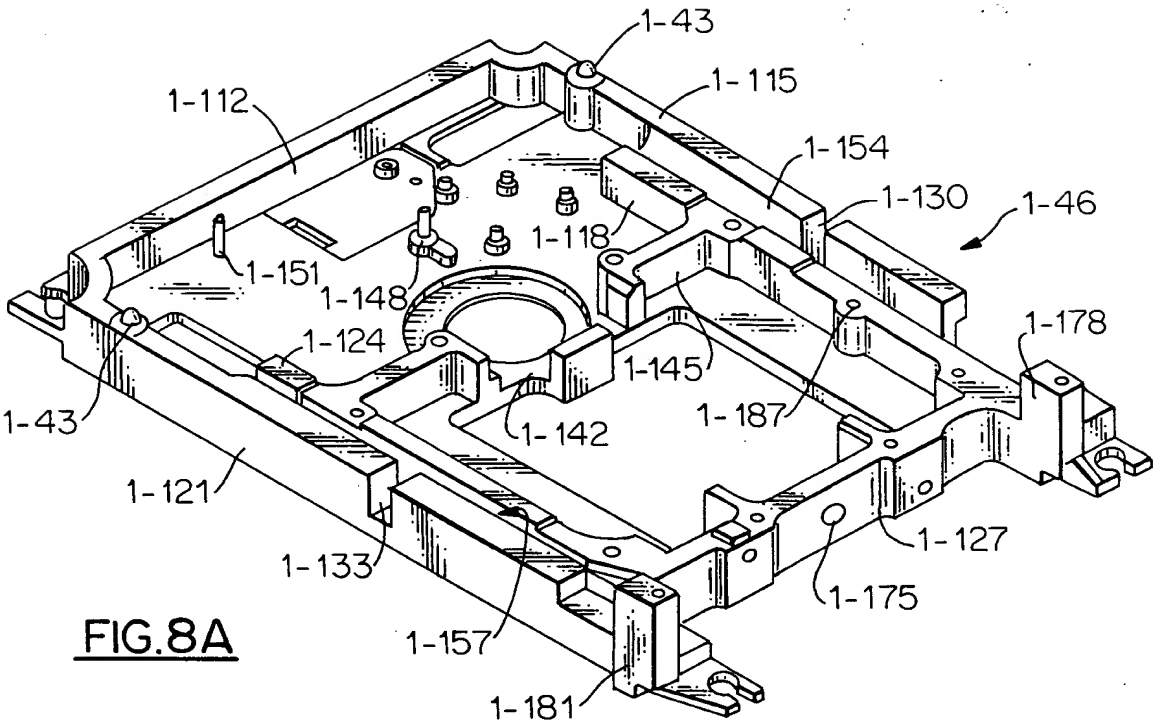
1-106
1- 103
1- 109
1-103
1-16

FIG.7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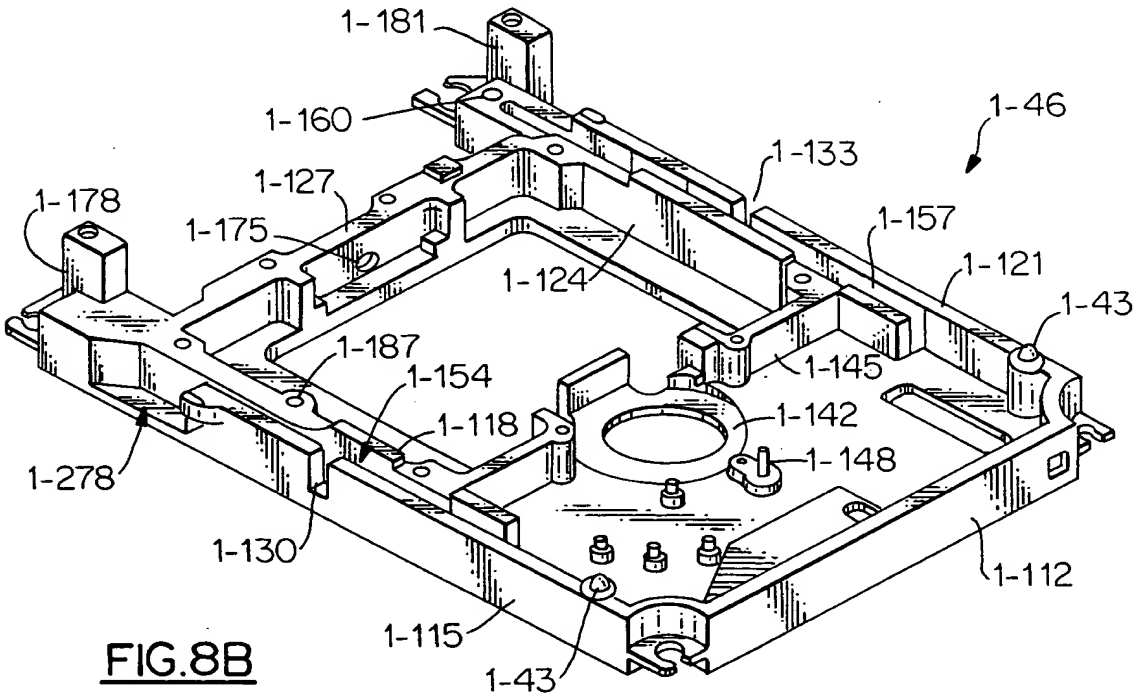
1-115
1-112
1-154
1-130
1-46
1-118
1-151
1-148
1-178
1-124
1-145
1-43
1-142
1-187
1-121
1-127
1-133
1-175
1-157
1-181

FIG.8A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1-157
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1-124
1-43
1-187
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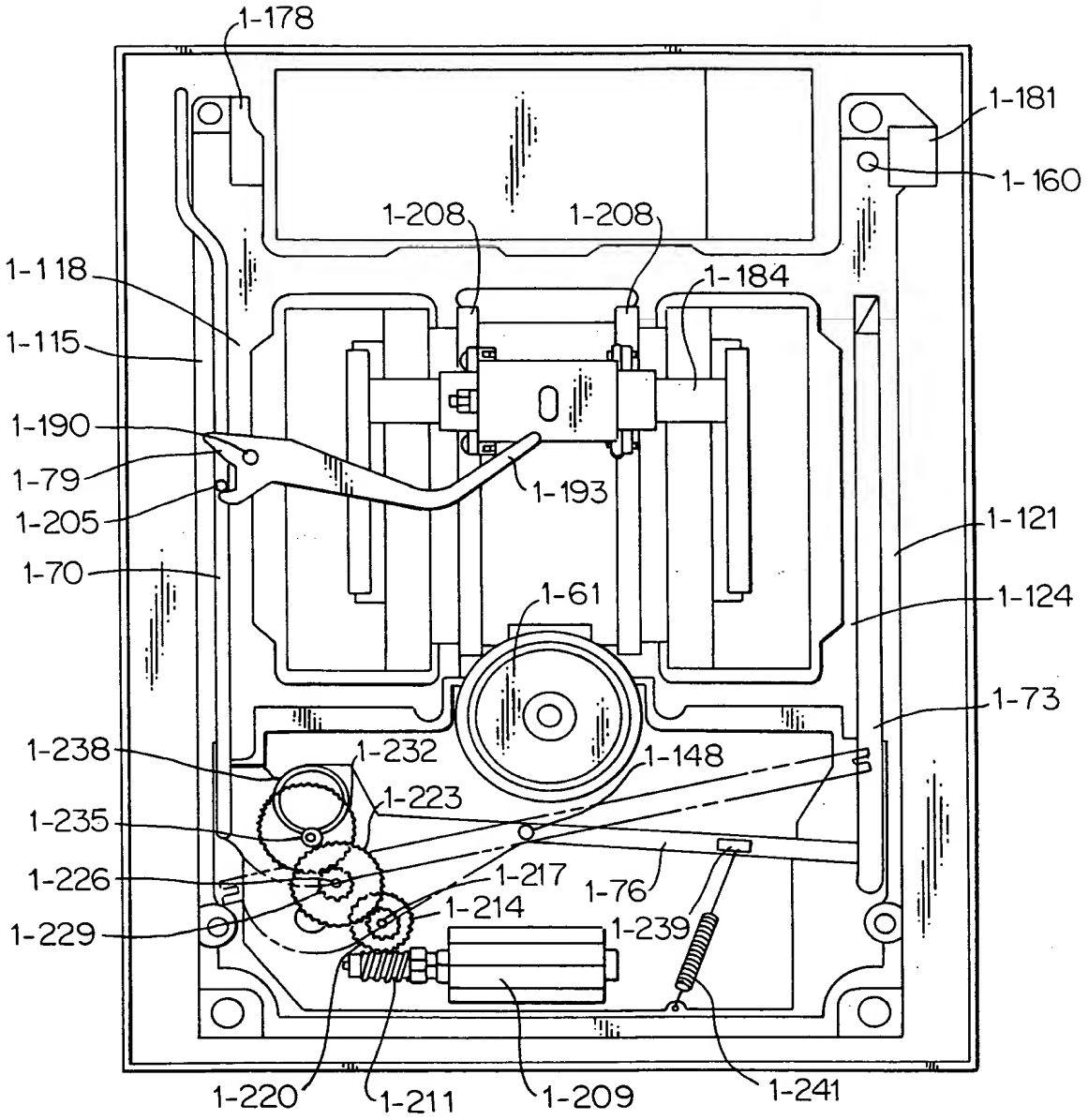
1-142
1-118
1-148
1-278
1-130
1-112
1-115
1-43

FIG.8B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1-118
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1-205
1-70
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1-124
1-61
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1-241

FIG.9

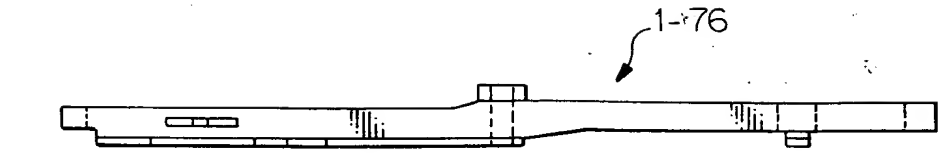


FIG.10A

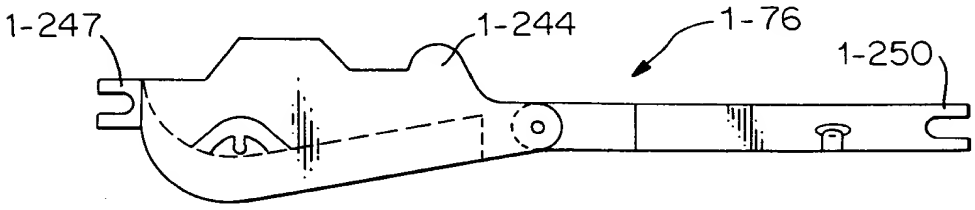


FIG.10B

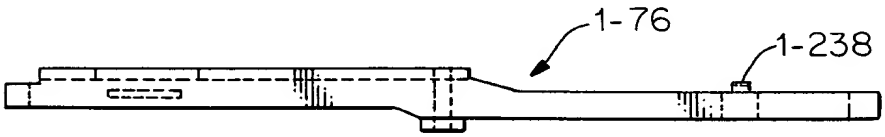


FIG.10C

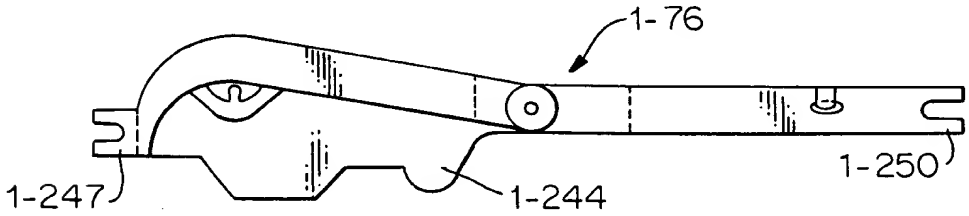


FIG.10D

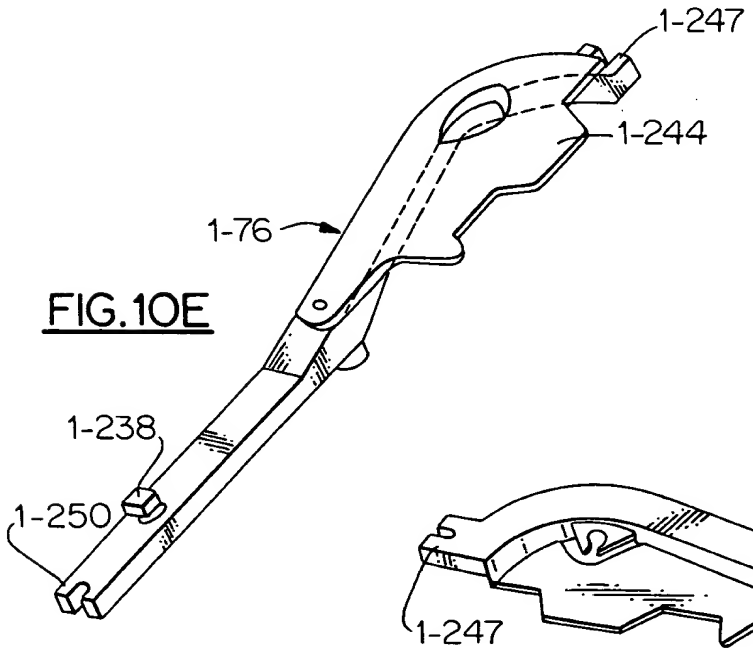


FIG.10E

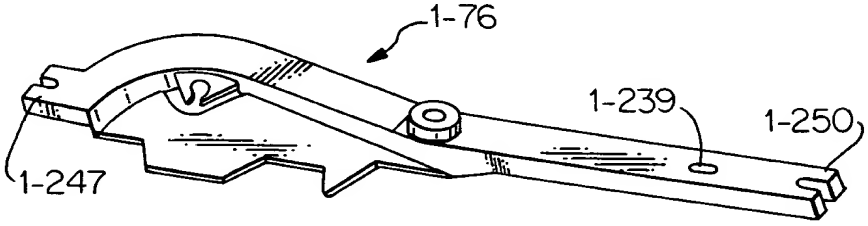


FIG.10F

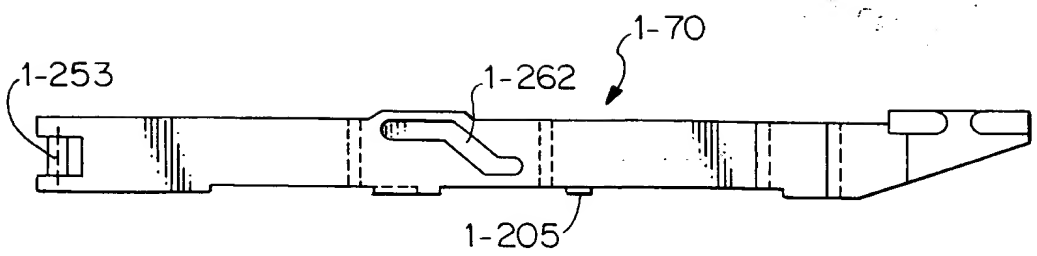


FIG.11A

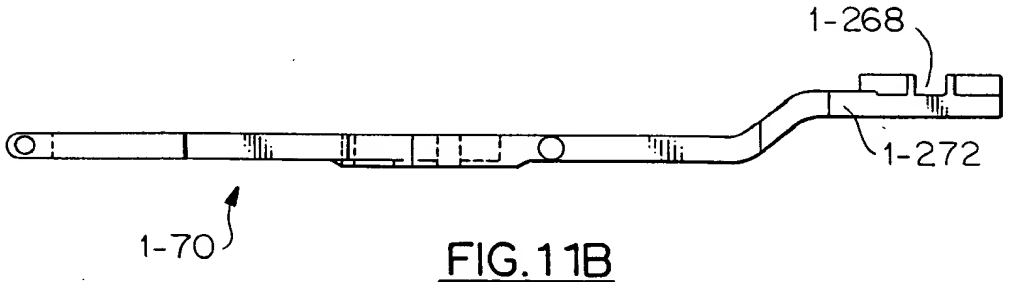


FIG.11B

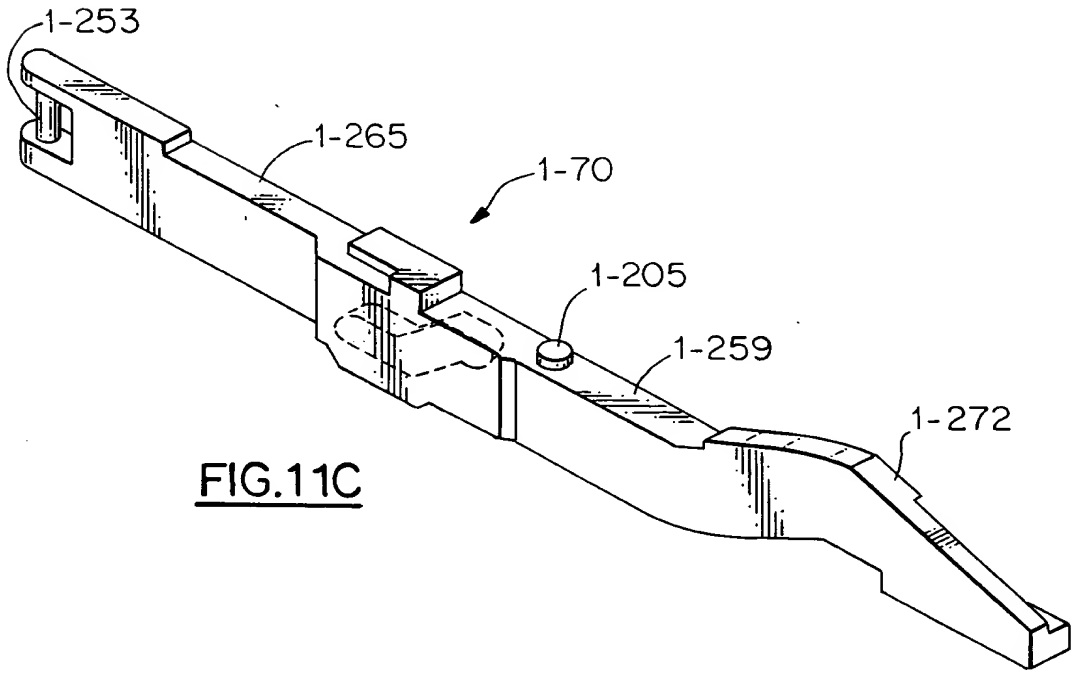


FIG.11C

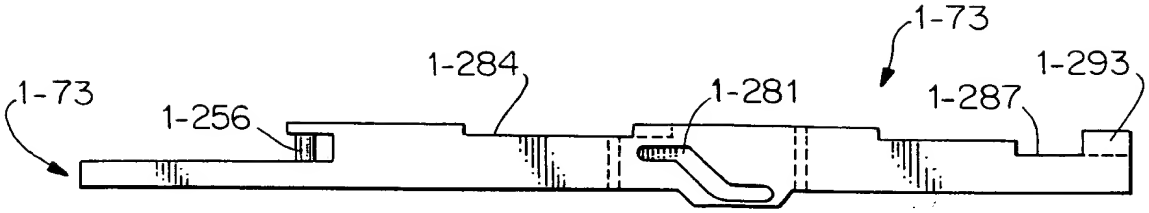


FIG.12A

FIG.12B

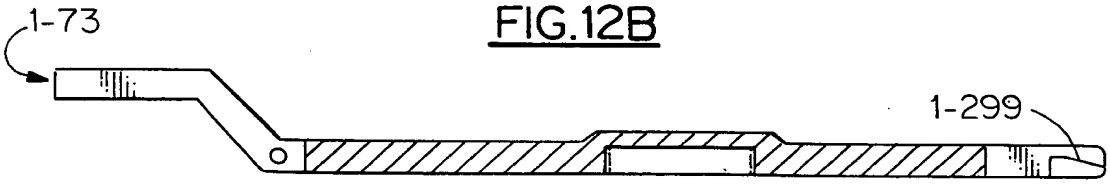


FIG.12C

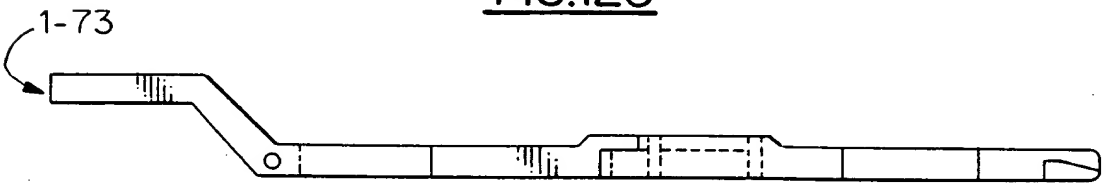


FIG.12D

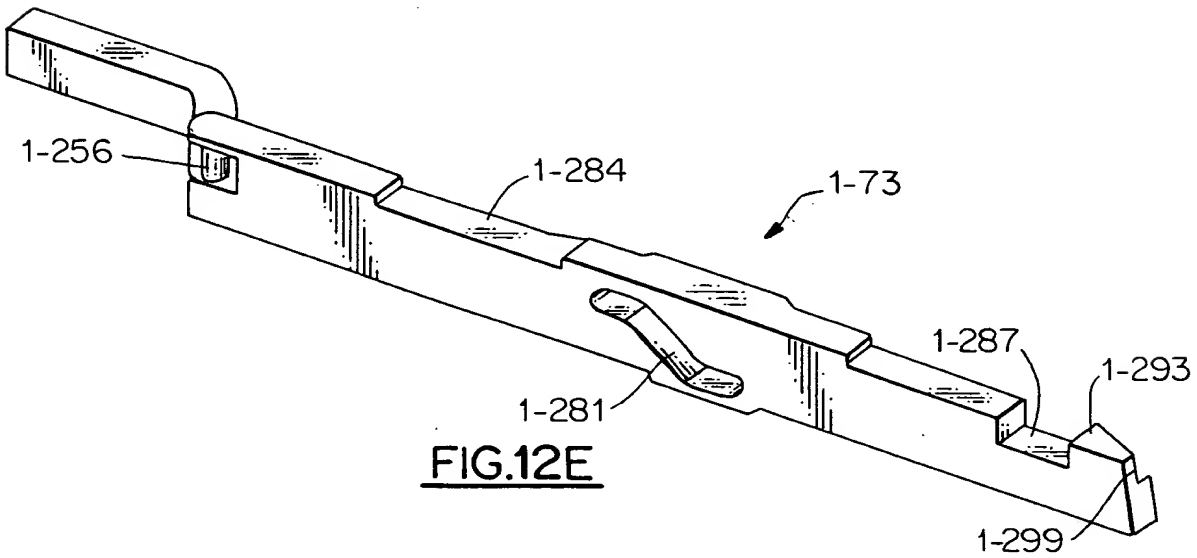


FIG.12E

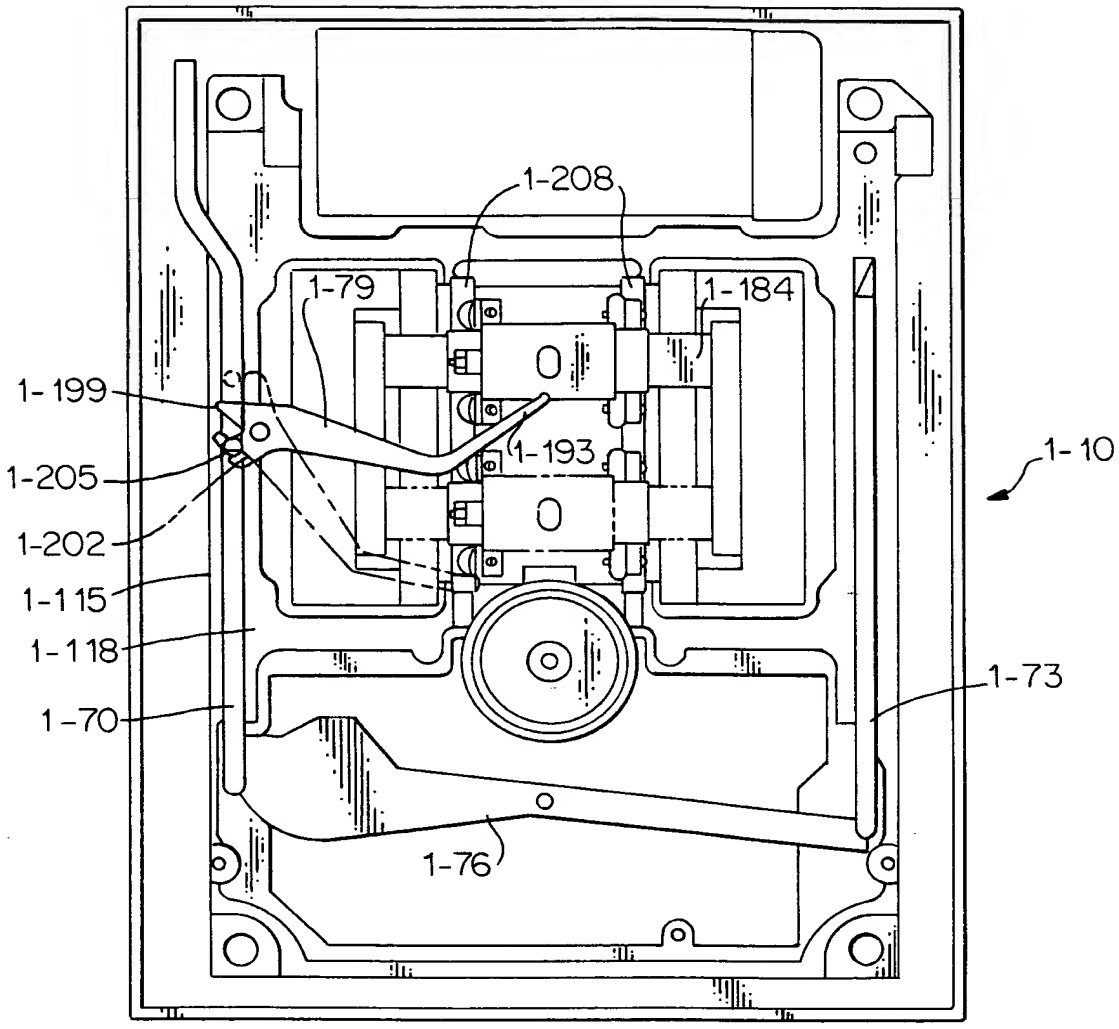


FIG.13

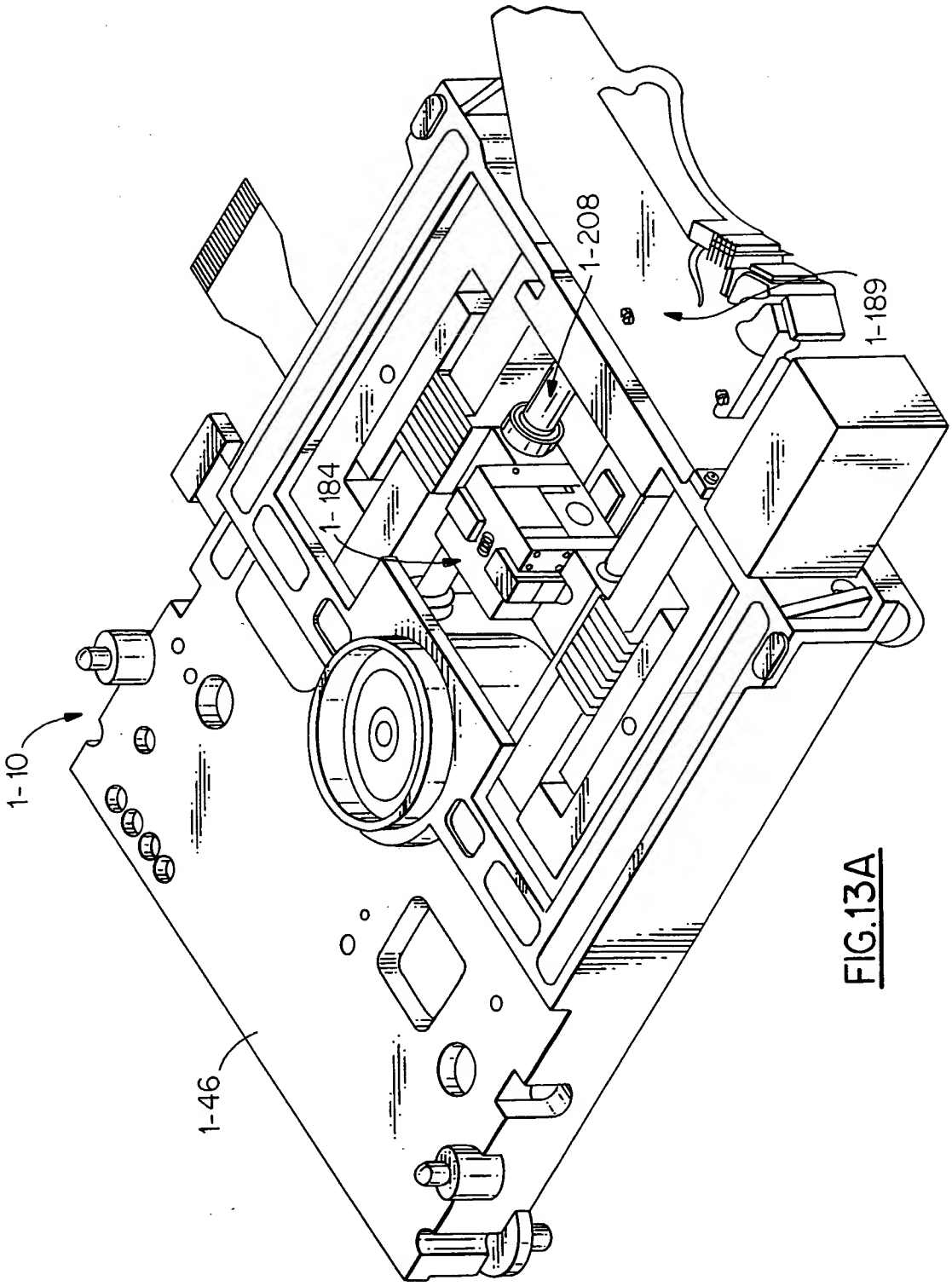


FIG.13A

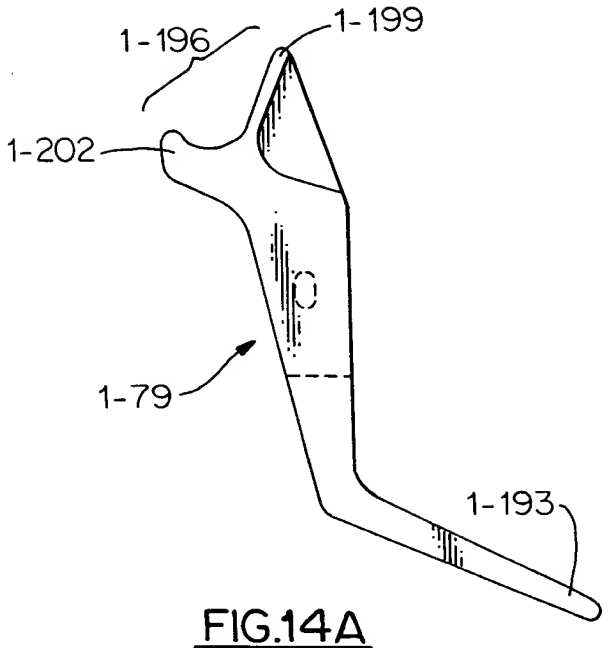


FIG.14A

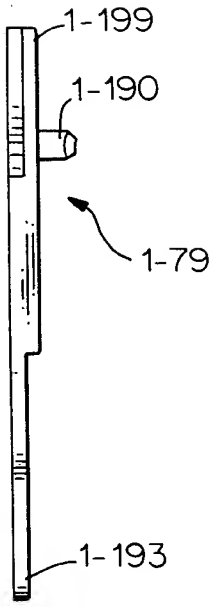


FIG.14B

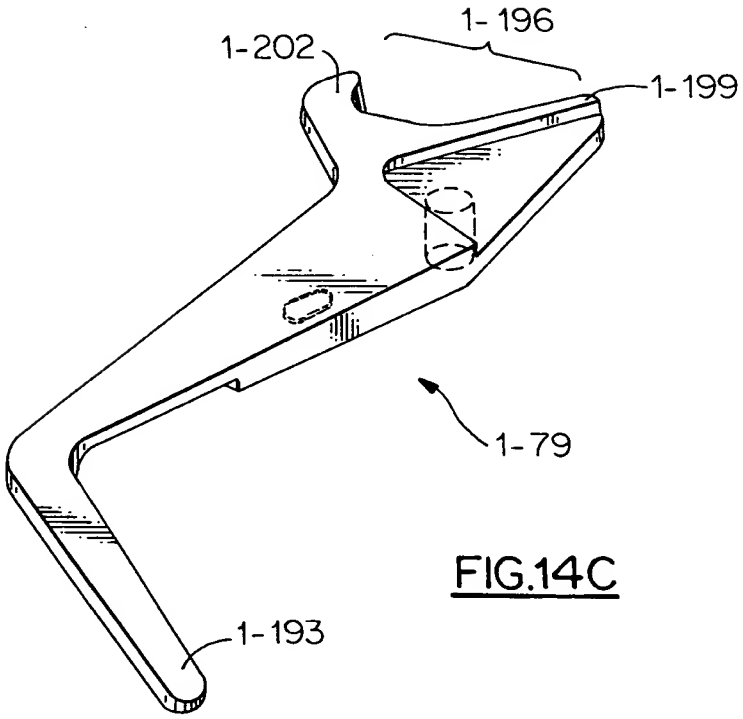


FIG.14C

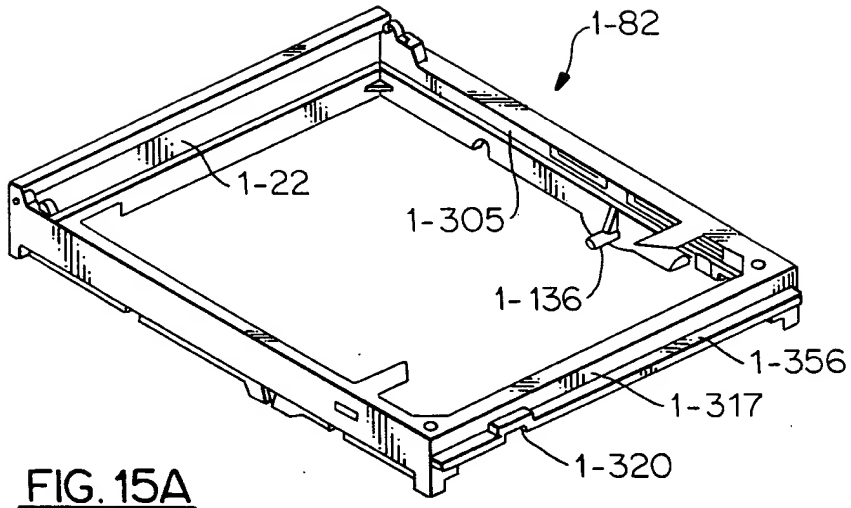


FIG. 15A

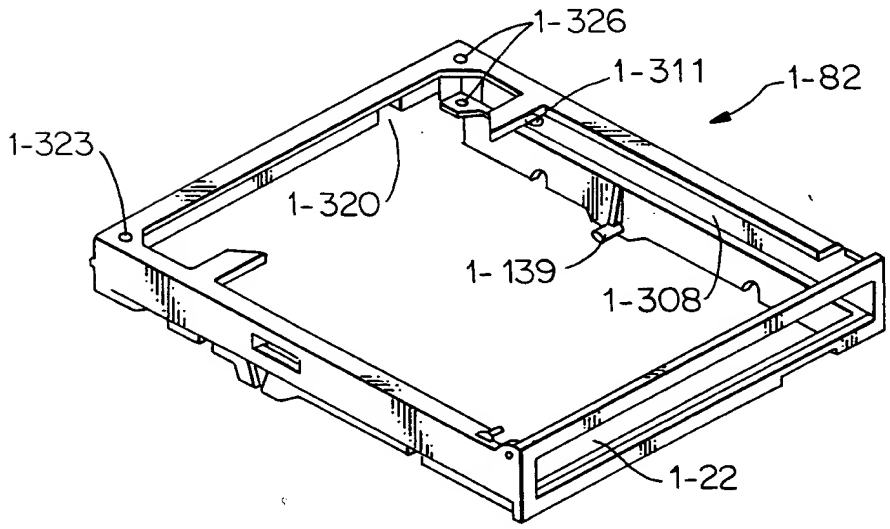
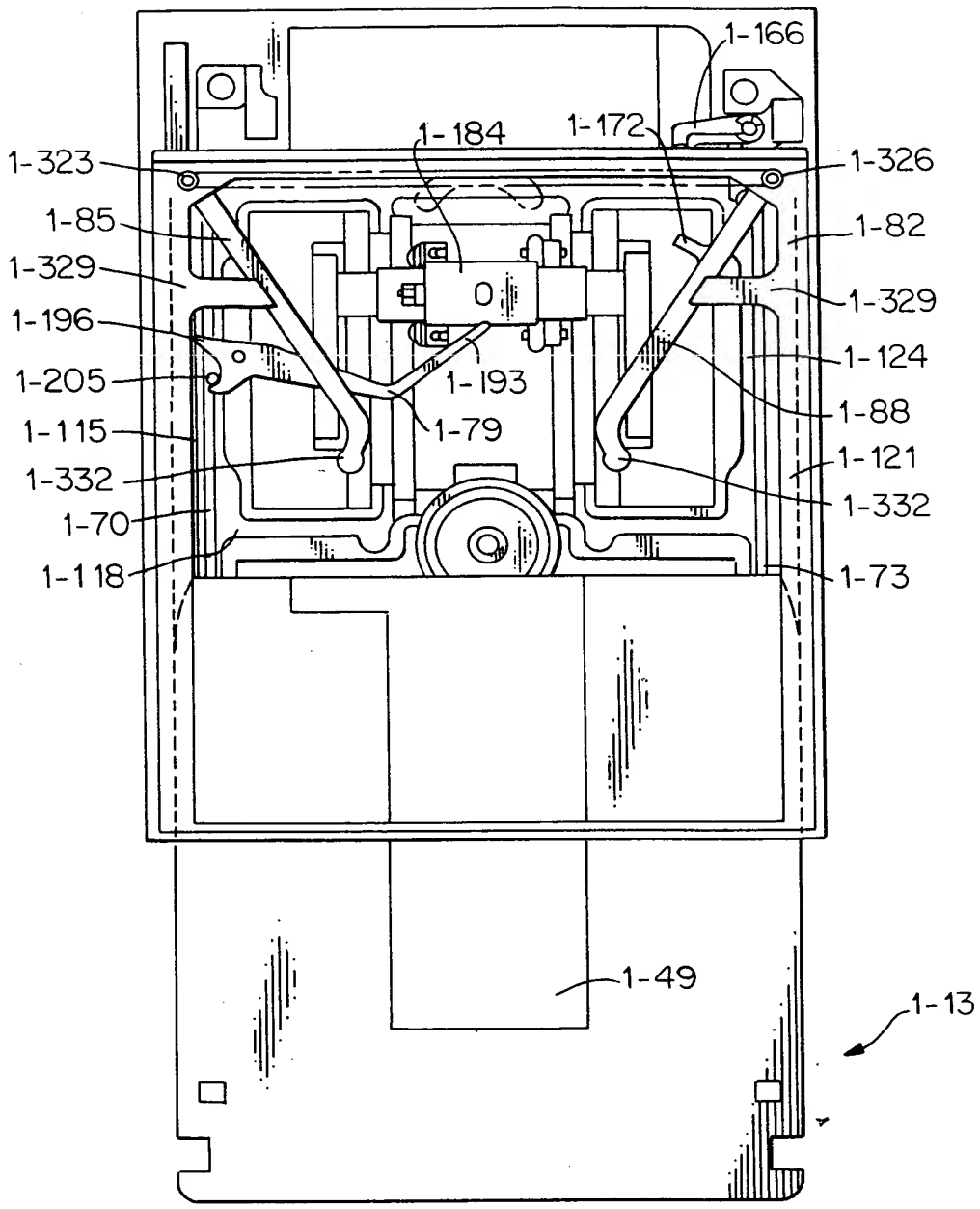


FIG. 15B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1-124
1-205
1-193
1-88
1-115
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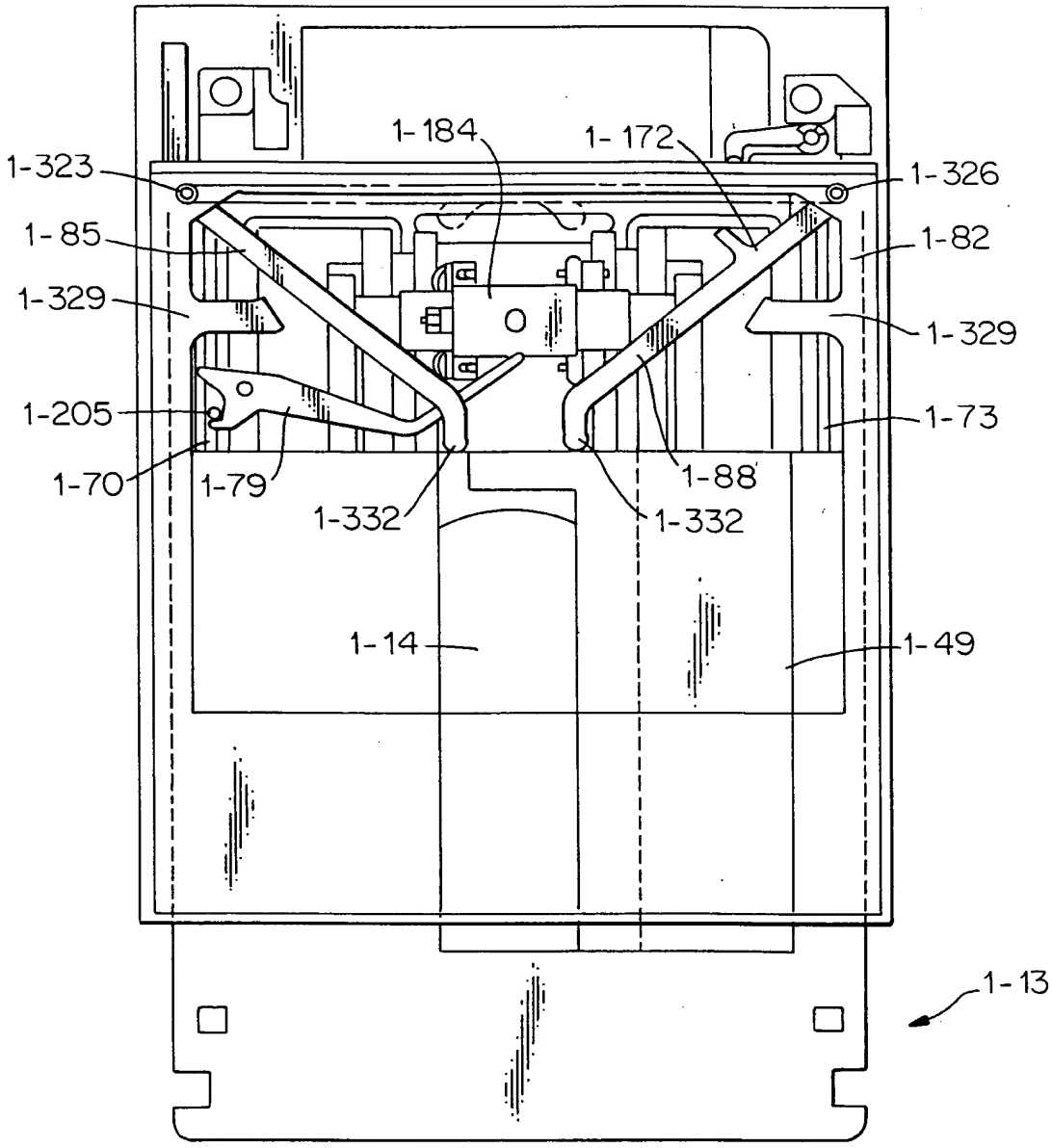
1-121
1-332
1-332
1-70
1-118
1-73
1-49
1-13

FIG.16A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1-172
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1-329
1-205
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1-332
1-88
1-332
1-14
1-49
1-13

FIG. 16B

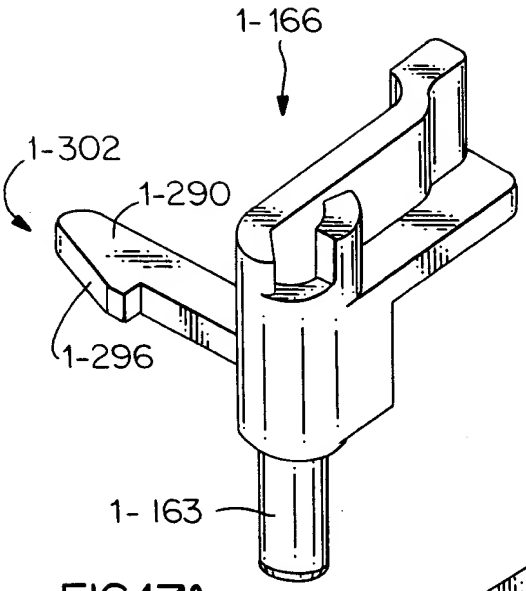


FIG.17A

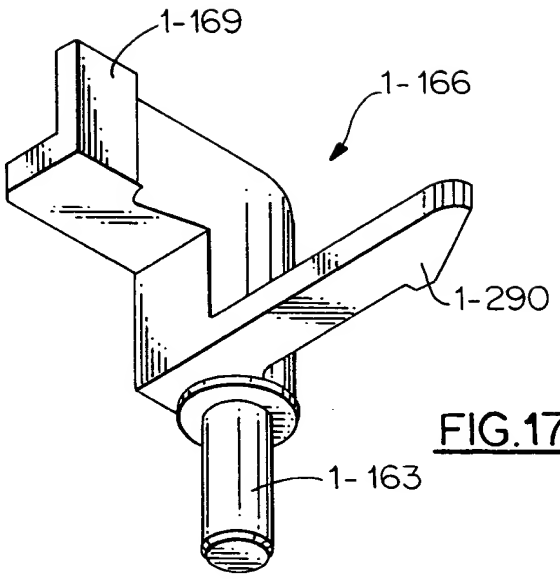


FIG.17B

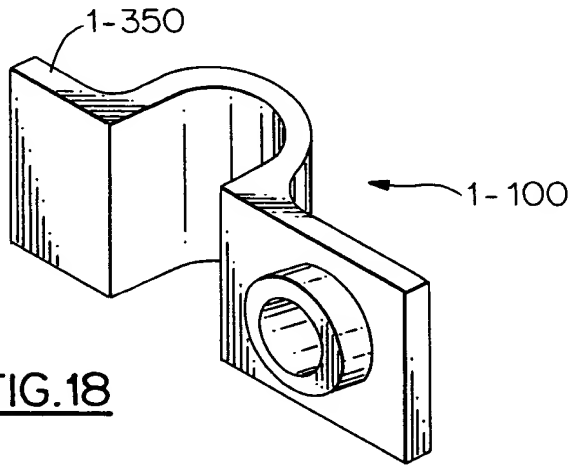


FIG.18

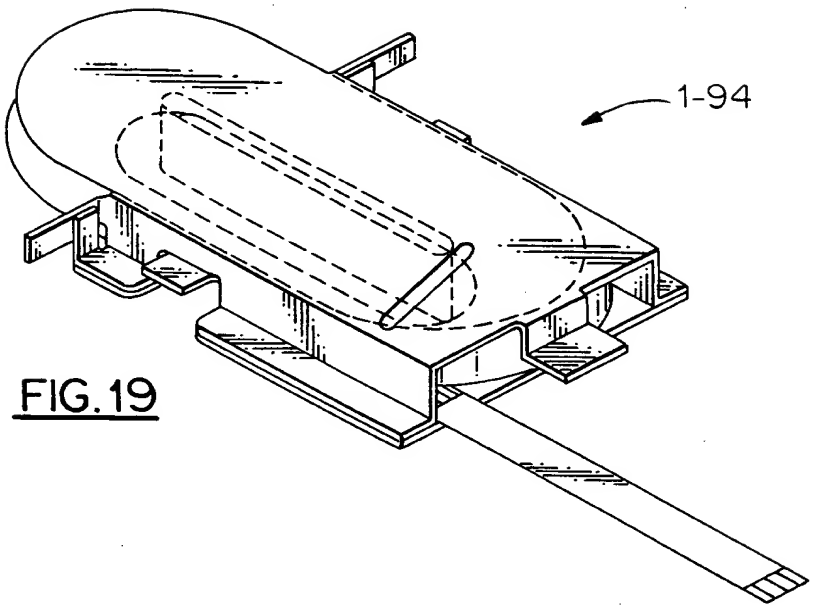


FIG.19

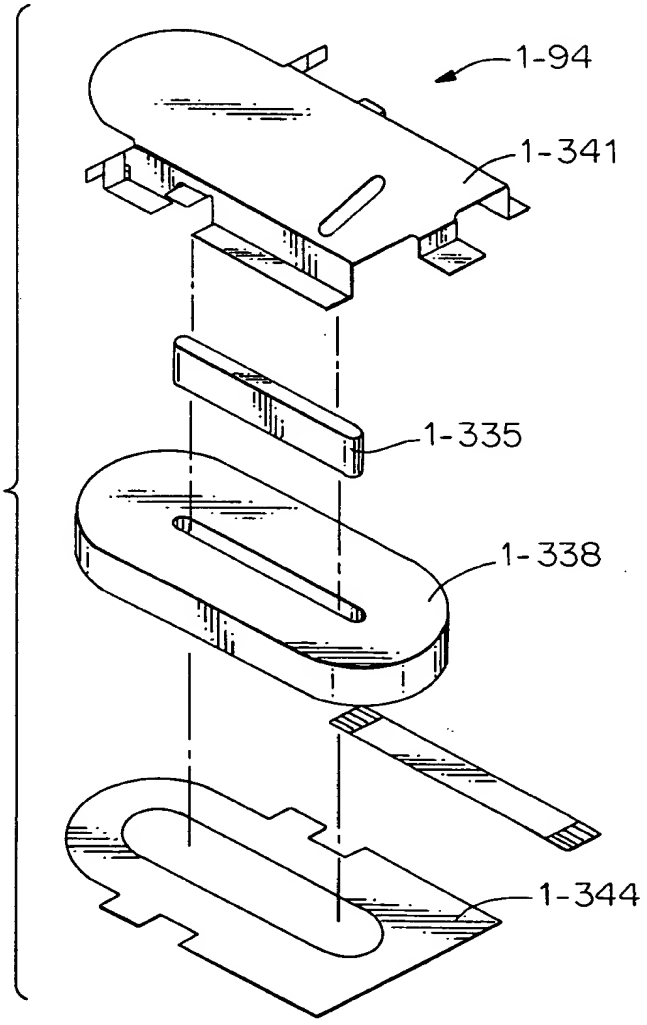


FIG.20

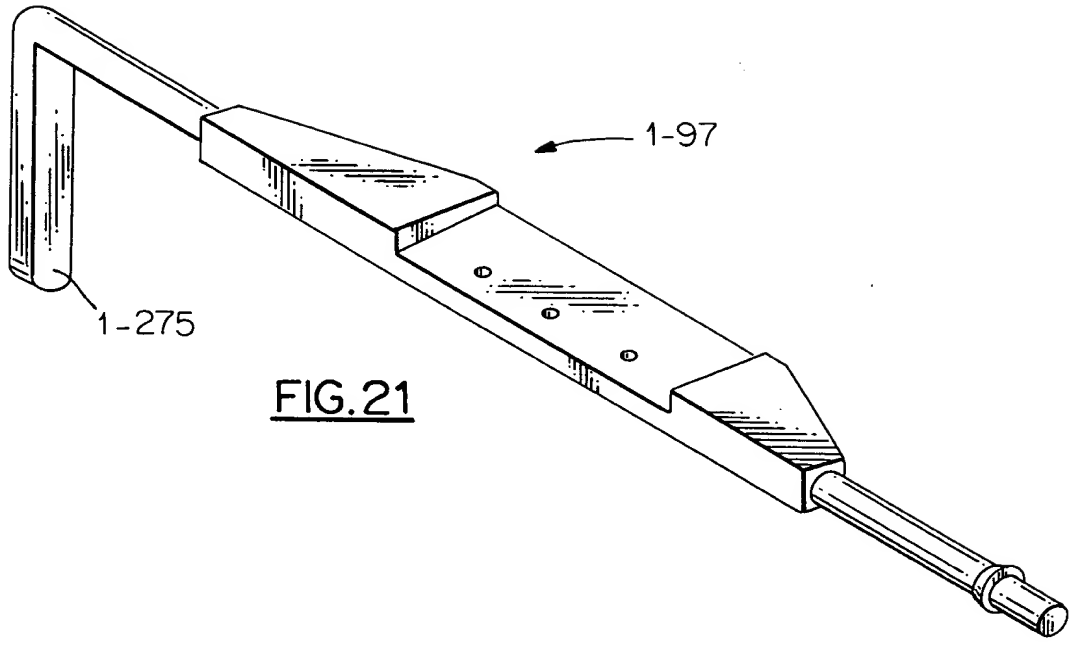


FIG.21

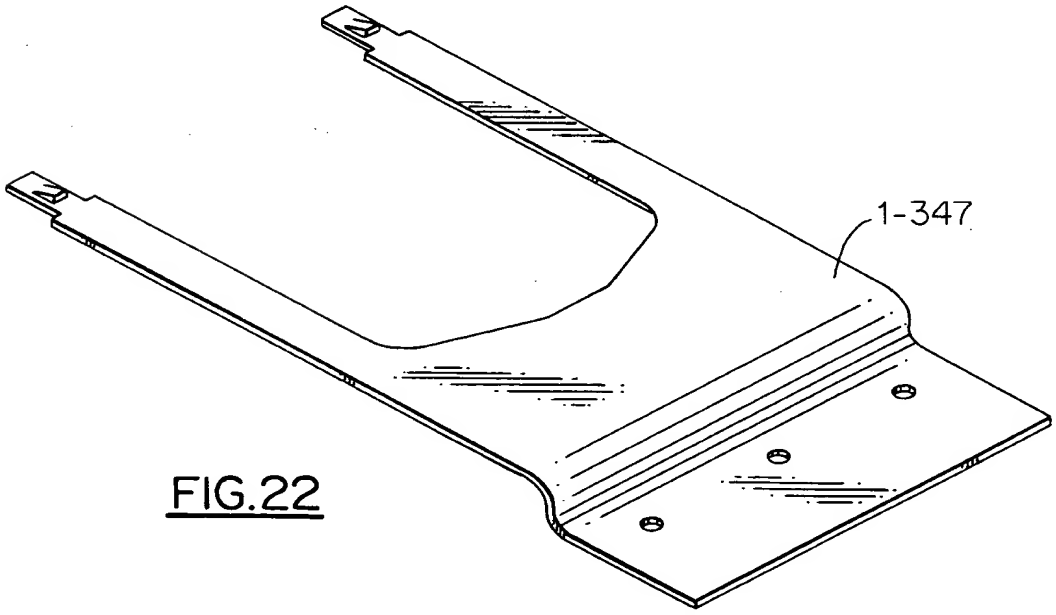


FIG.22

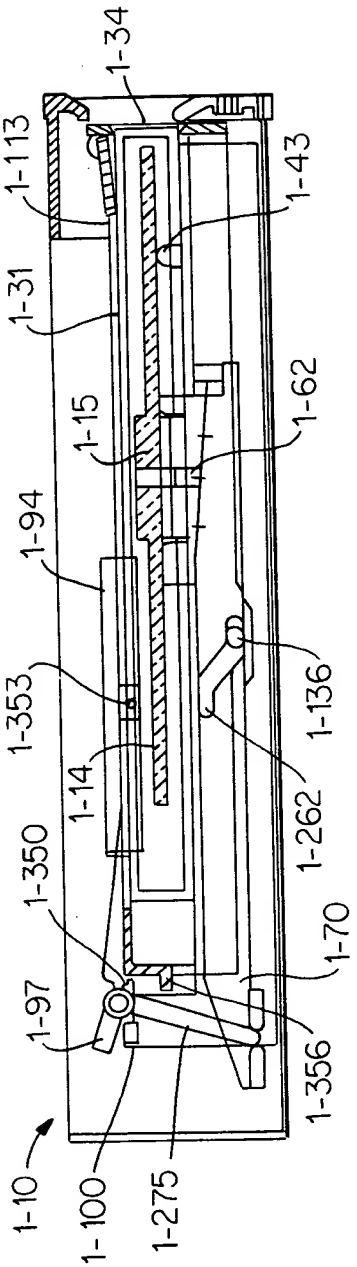


FIG.23

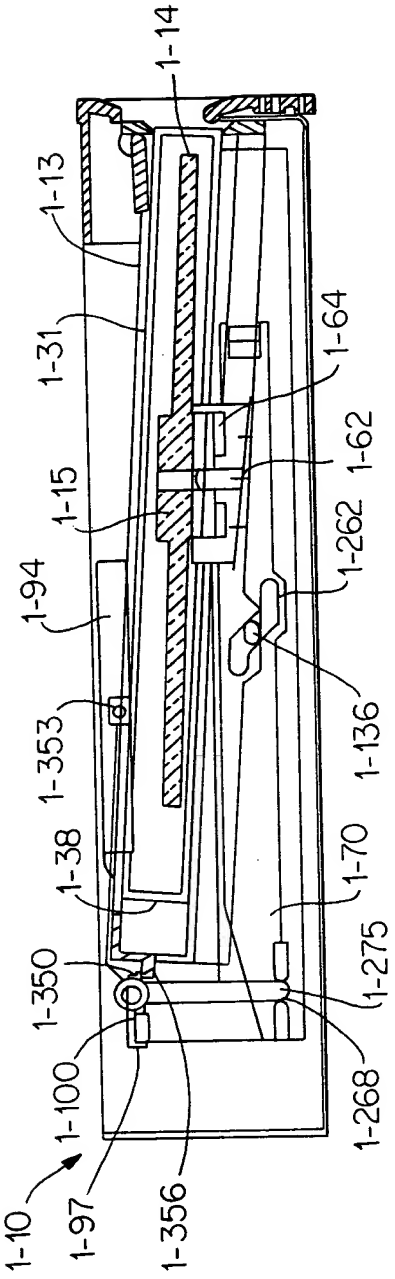


FIG.24

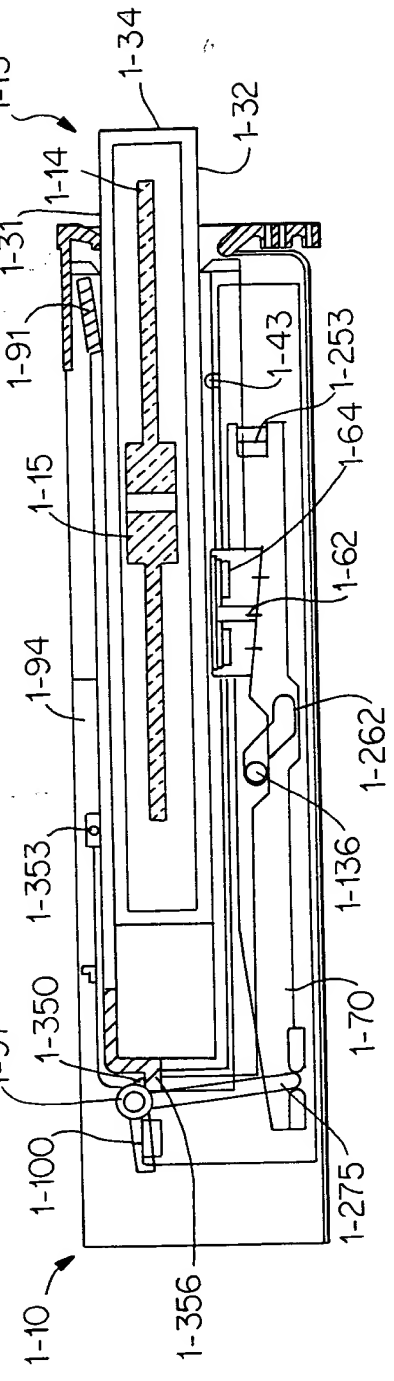
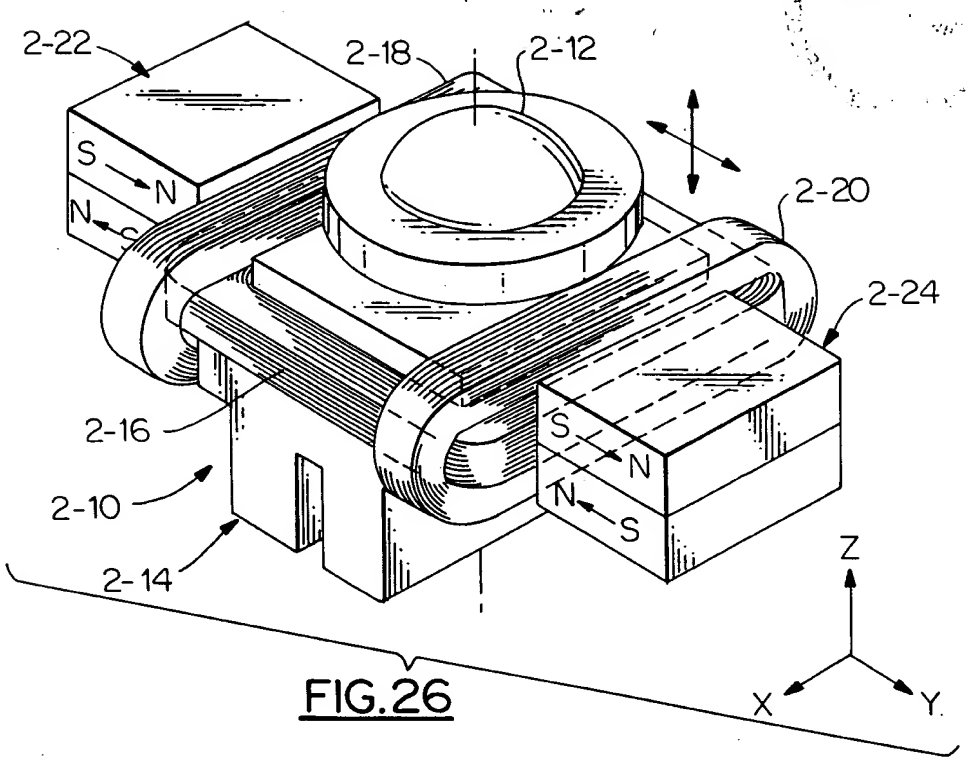


FIG.25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2-14
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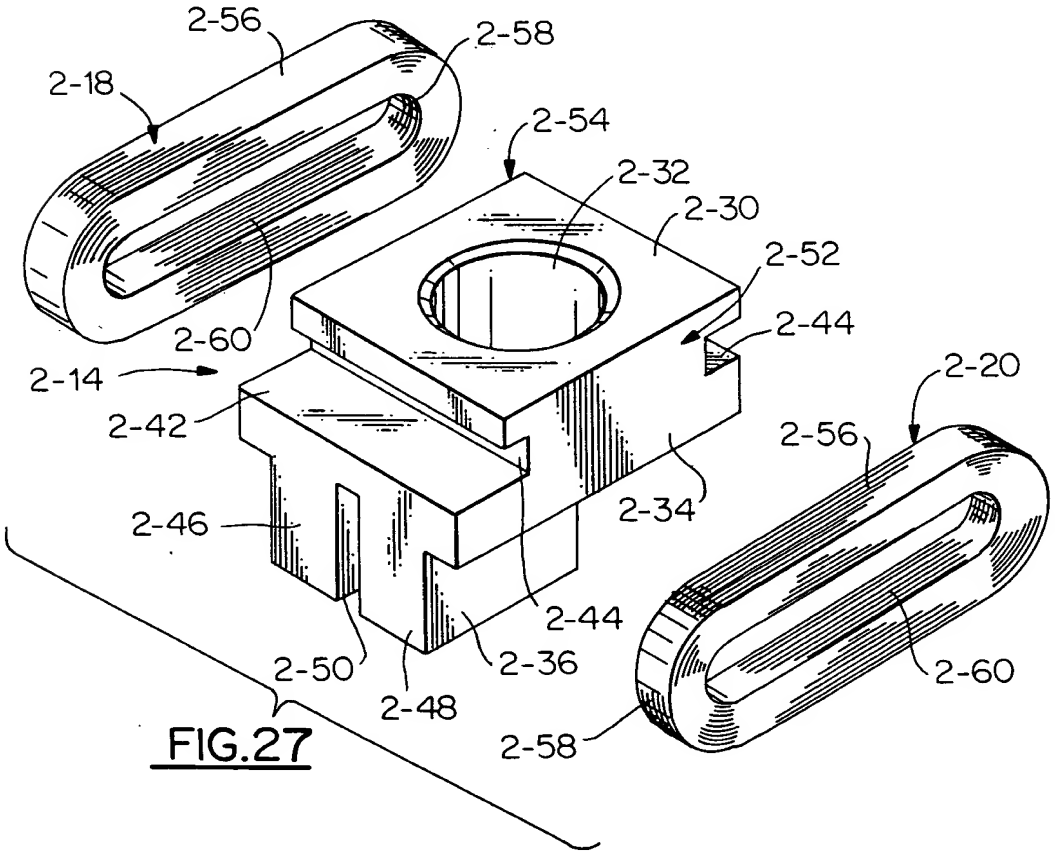
N
N
S
S
N
N
S
Z
X
Y

FIG.26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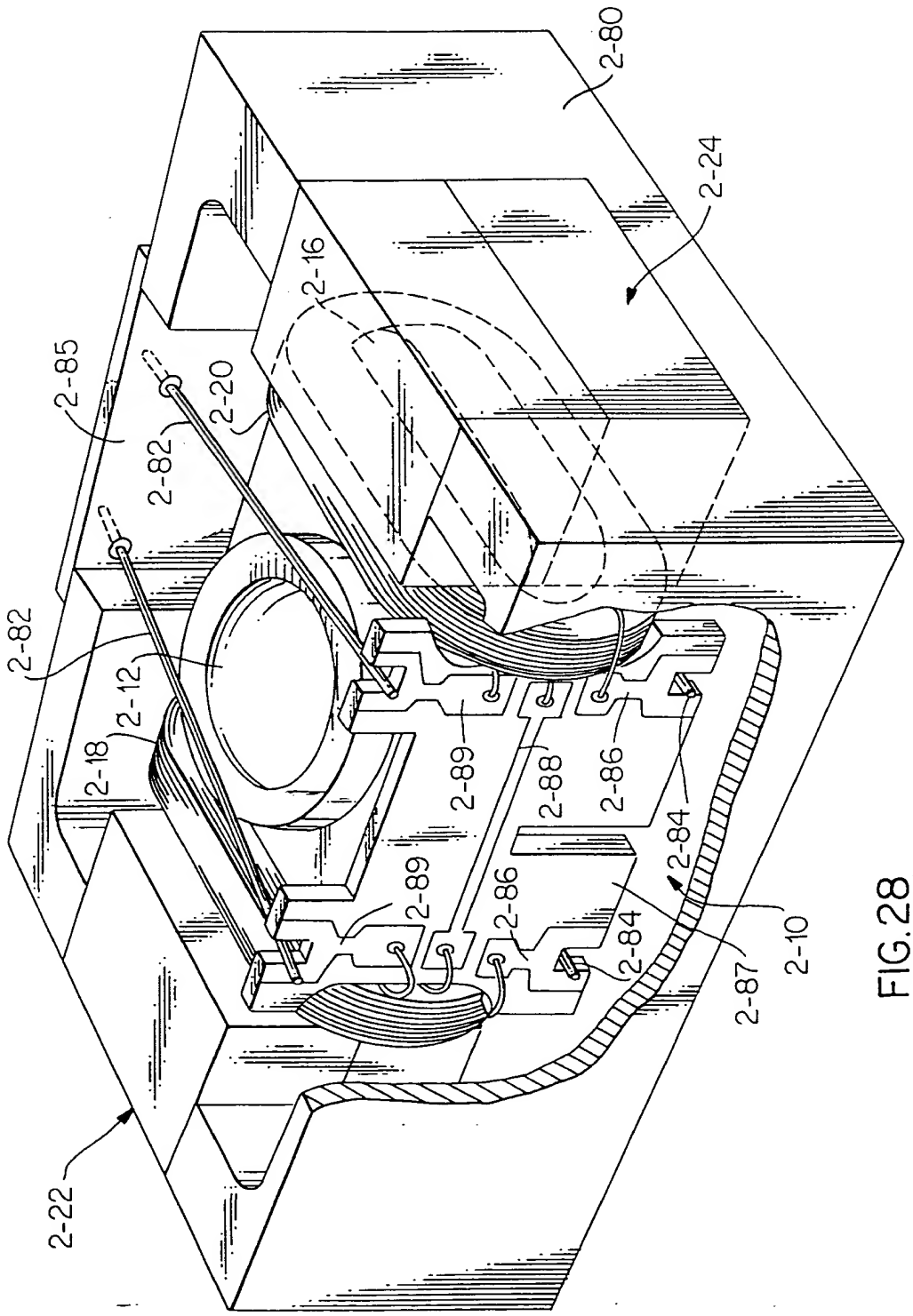
2-58

FIG.27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2-22

FIG.28

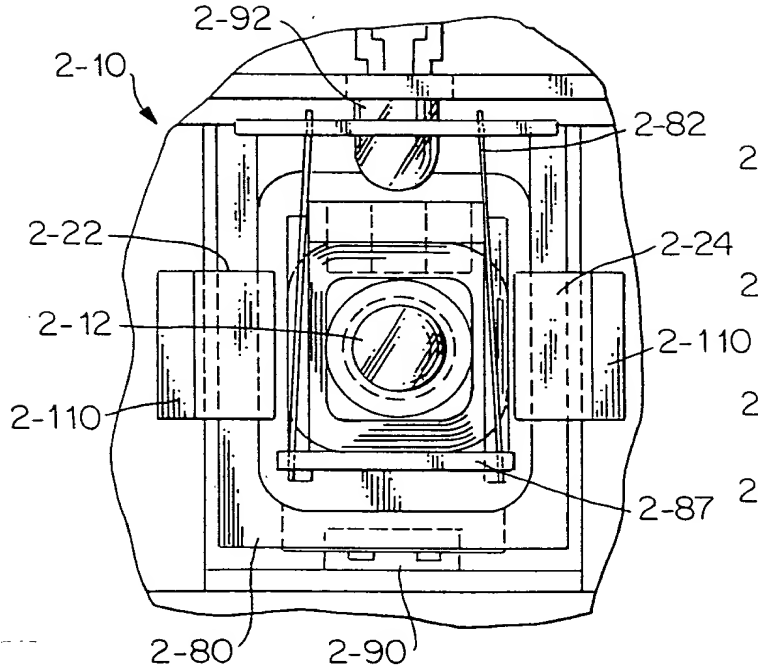


FIG.29

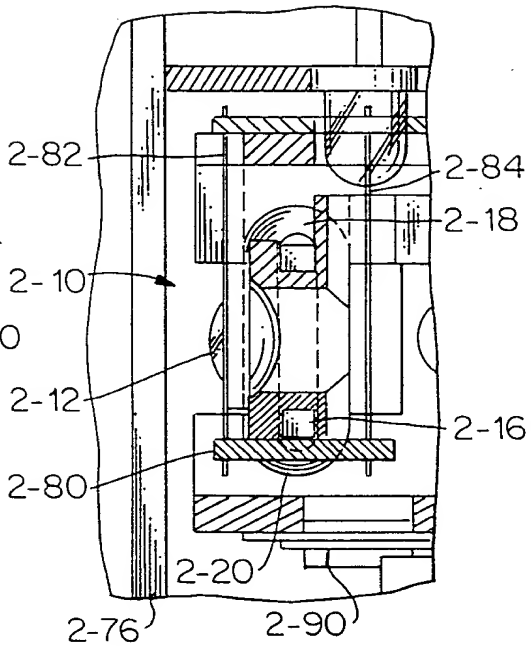


FIG.30

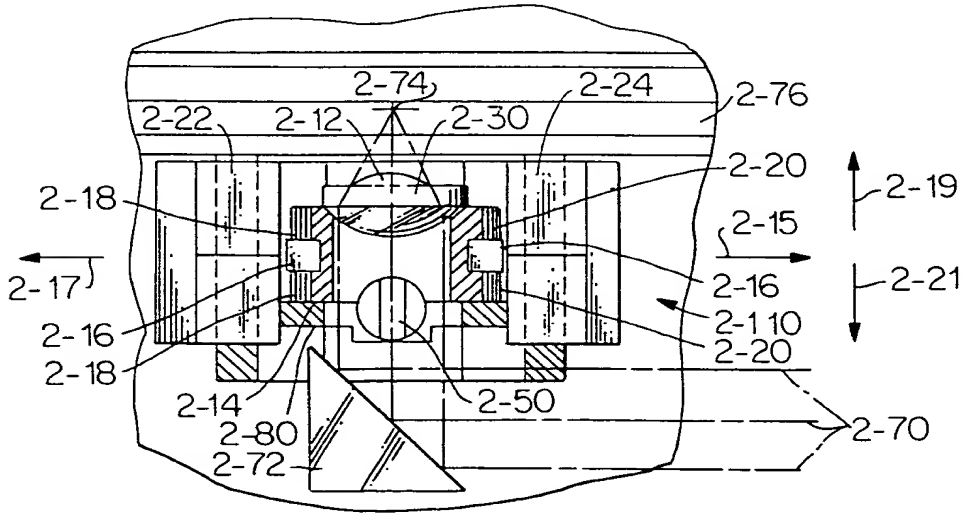


FIG.31

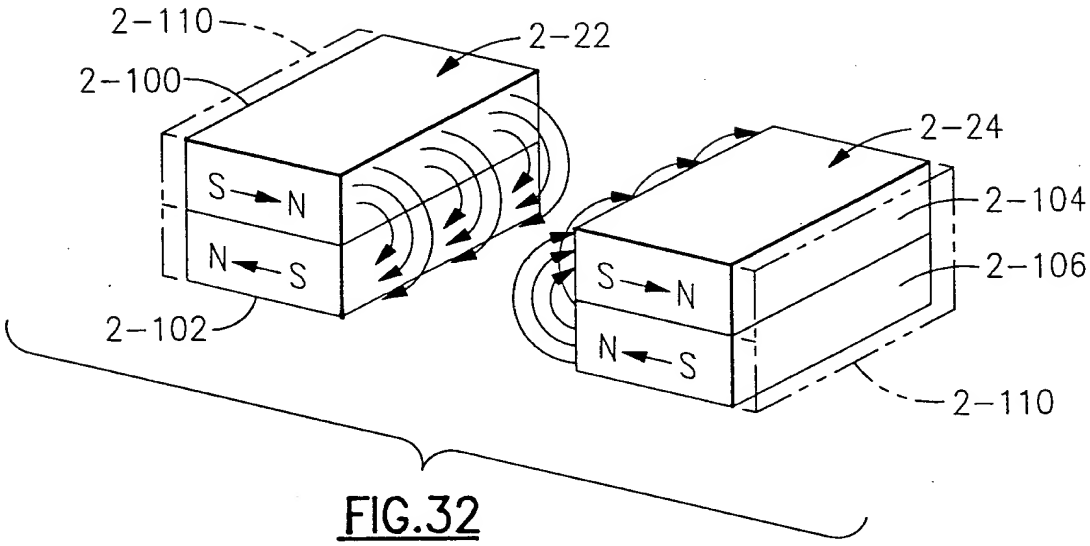
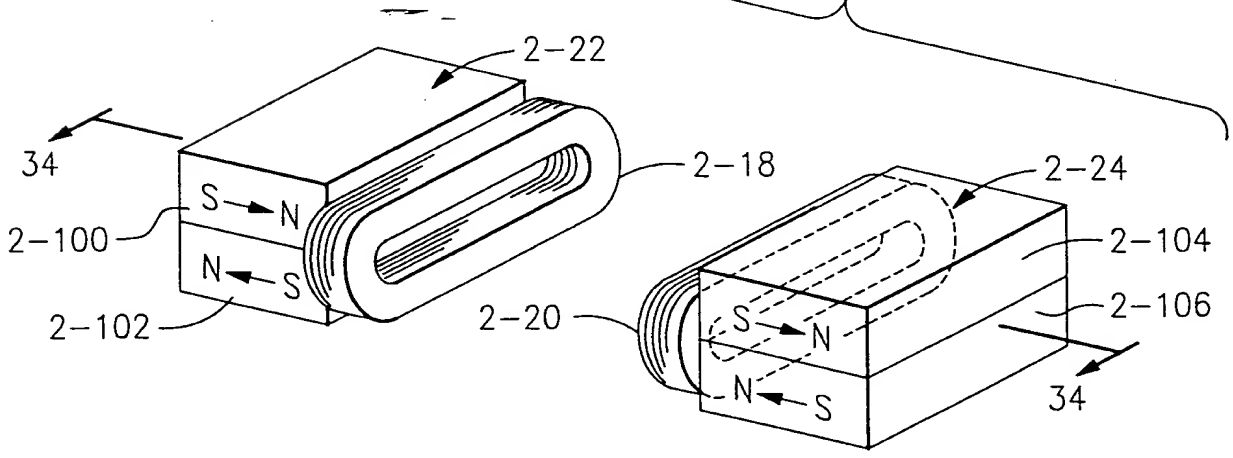

2-110
2-22
2-100
2-24
2-104
2-106
S
N
N
S
2-102
2-110

FIG.32

FIG.33


2-22
34
2-18
2-24
2-100
2-104
2-106
2-102
2-20
34

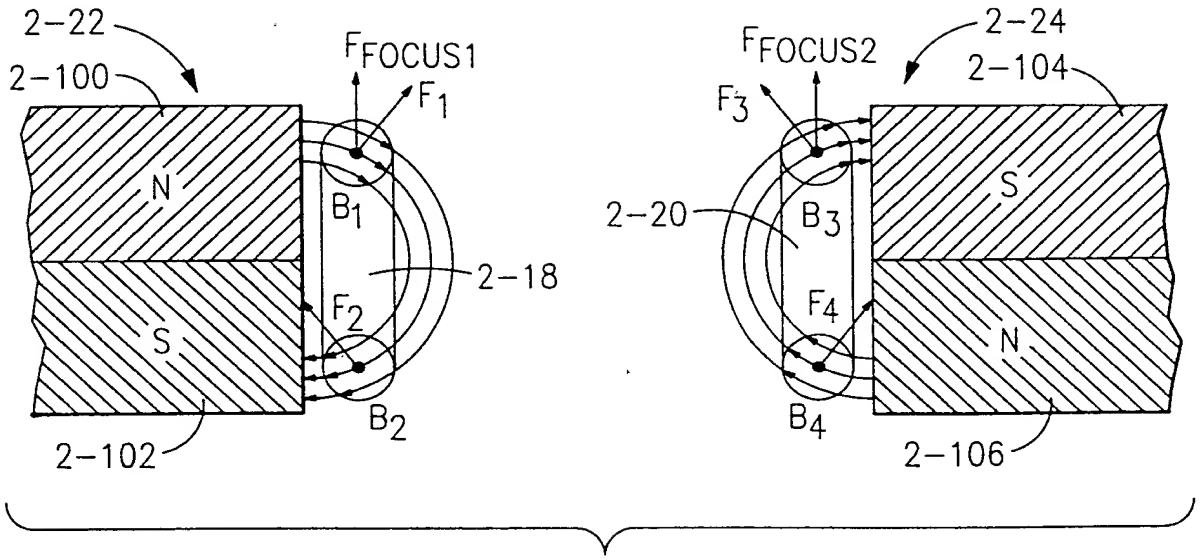

2-22
2-100
N
S
2-102
F_{FOCUS1}
F_1
B_1
F_2
B_2
2-18
2-20
F_{FOCUS2}
F_3
B_3
F_4
B_4
2-24
2-104
S
N
2-106

FIG.34

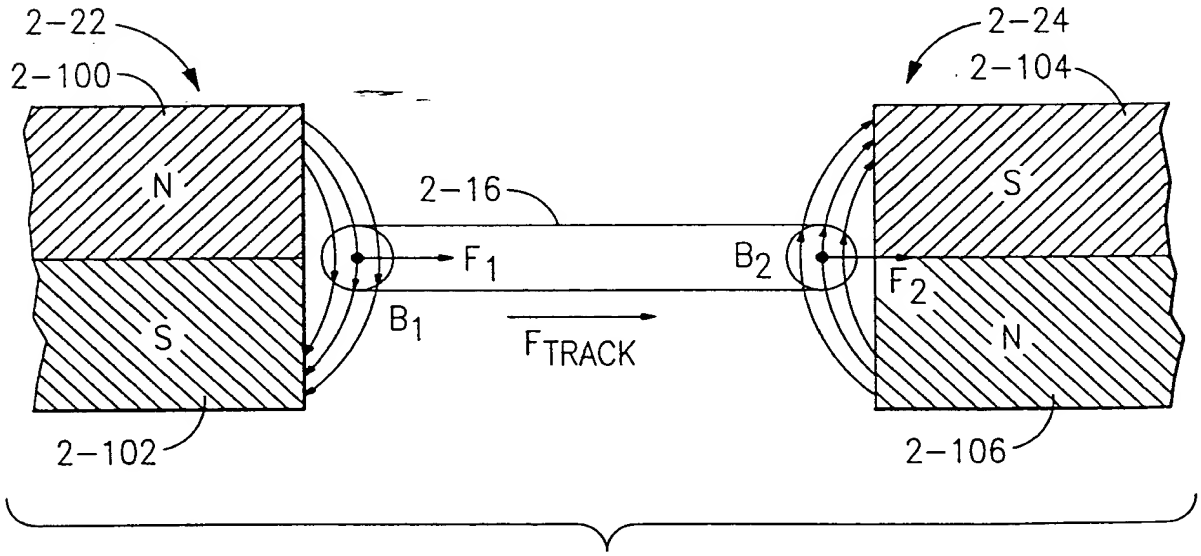

2-22
2-100
N
S
2-102
2-16
F_1
B_1
F_{TRACK}
B_2
F_2
2-24
2-104
S
N
2-106

FIG.35

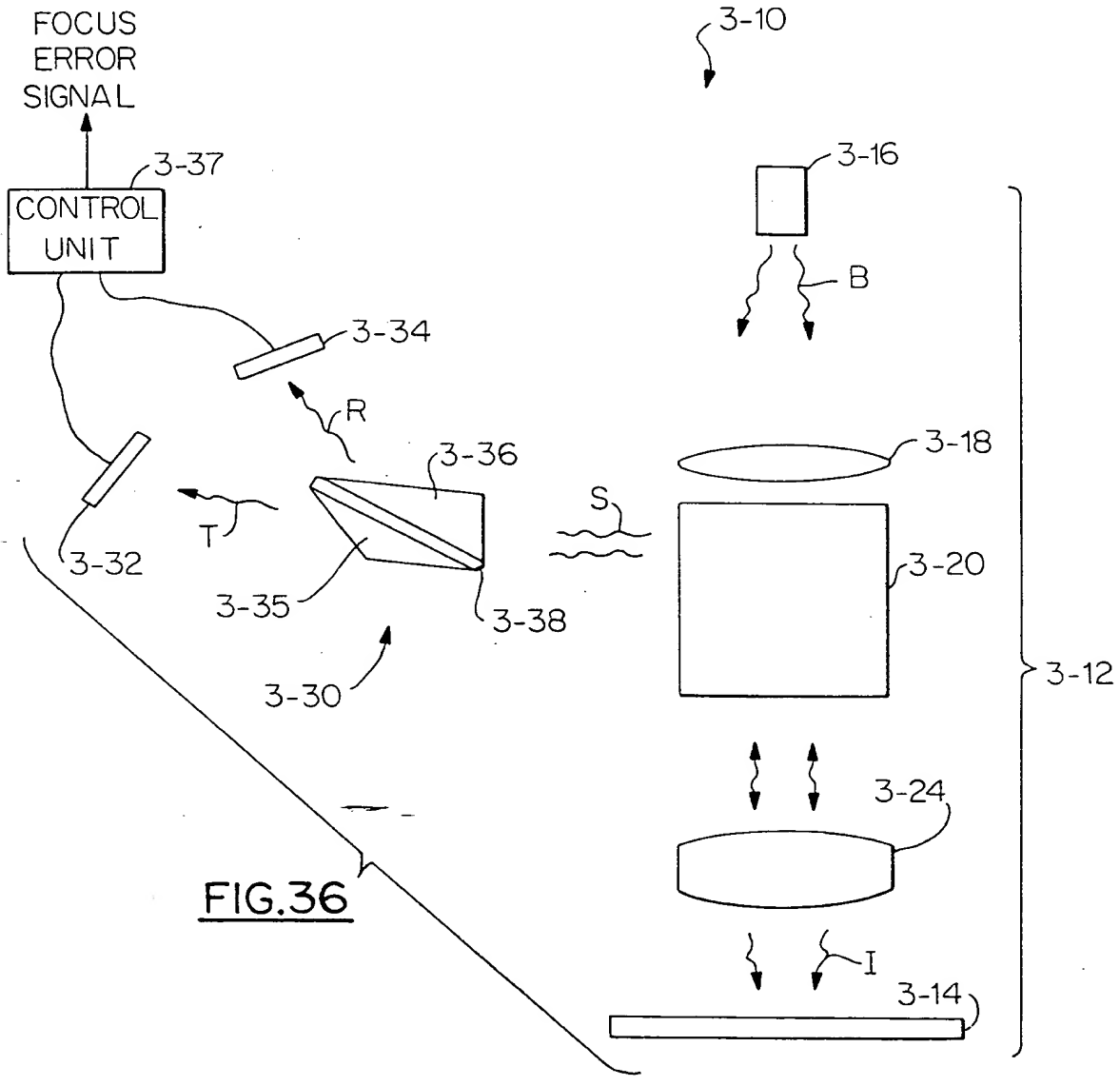

FOCUS
ERROR
SIGNAL
3-37
CONTROL
UNIT
3-10
3-16
B
3-34
R
3-36
3-18
S
T
3-32
3-35
3-38
3-20
3-30
3-12
3-24
I
3-14

FIG.36

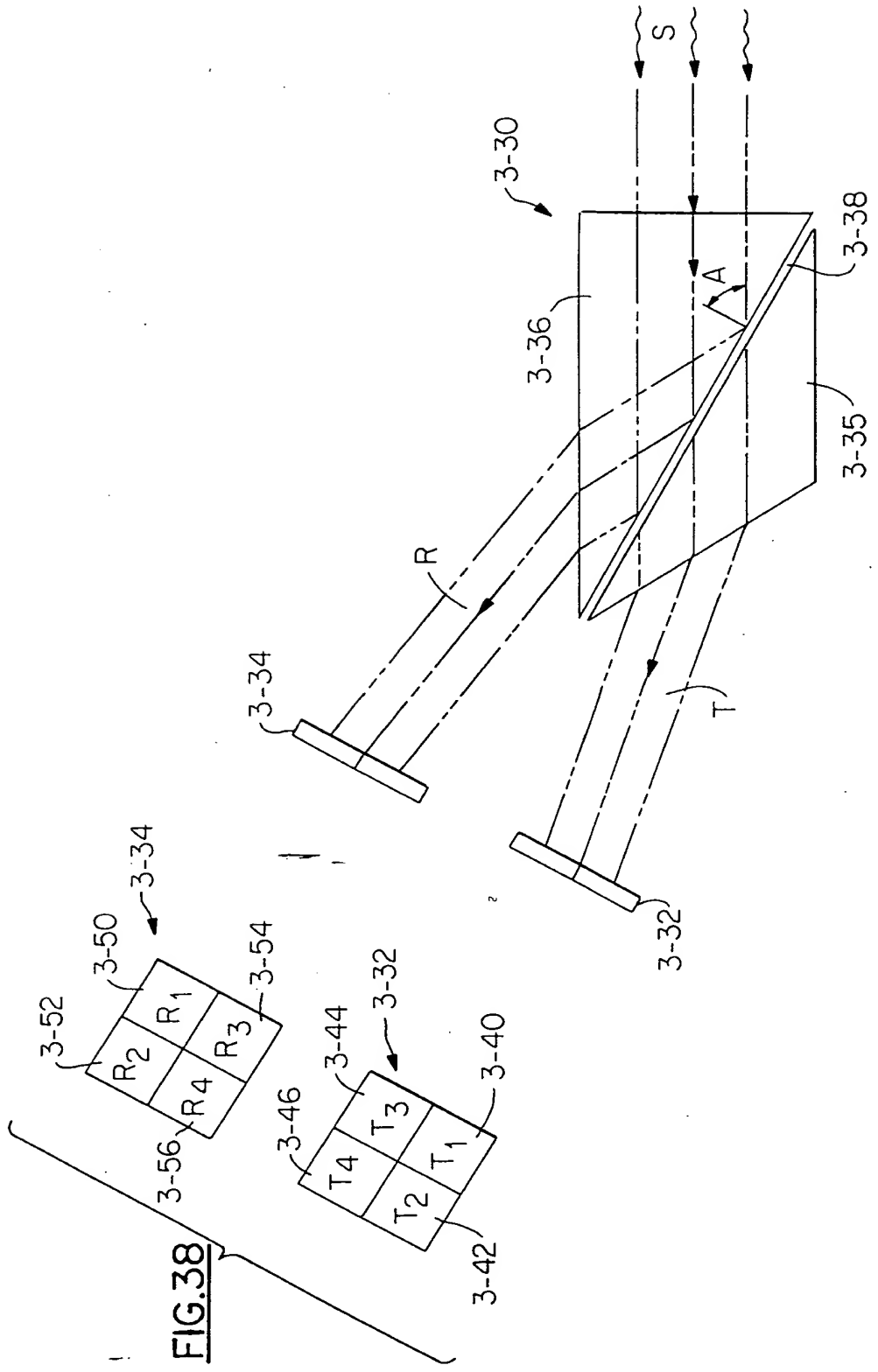

S
3-30
3-38
A
3-36
3-35
R
3-34
T
3-32
3-34
3-50
3-54
3-52
R1
R2
R3
R4
3-56
3-32
3-44
3-40
3-46
T3
T4
T1
T2
3-42

FIG.37

FIG.38

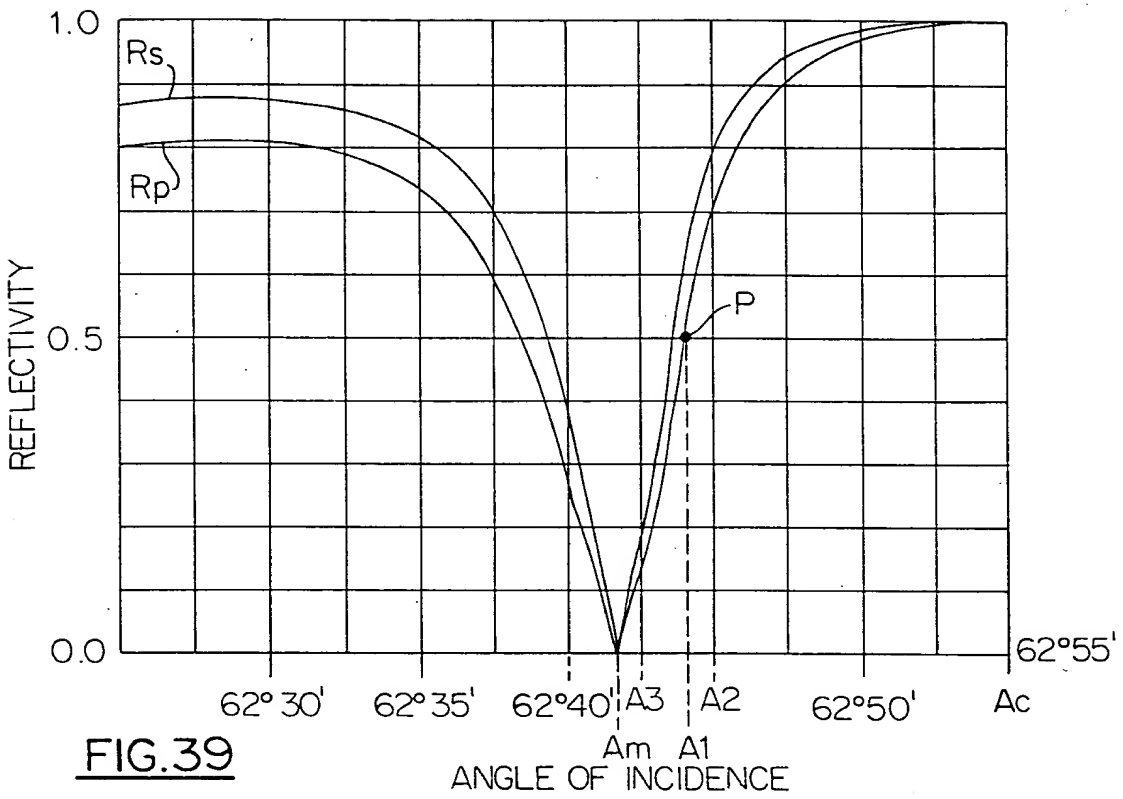

1.0
0.5
0.0
REFLECTIVITY
Rs
Rp
P
62°30'
62°35'
62°40'
A3
A2
62°50'
62°55'
Ac
Am
A1
ANGLE OF INCIDENCE

FIG.39

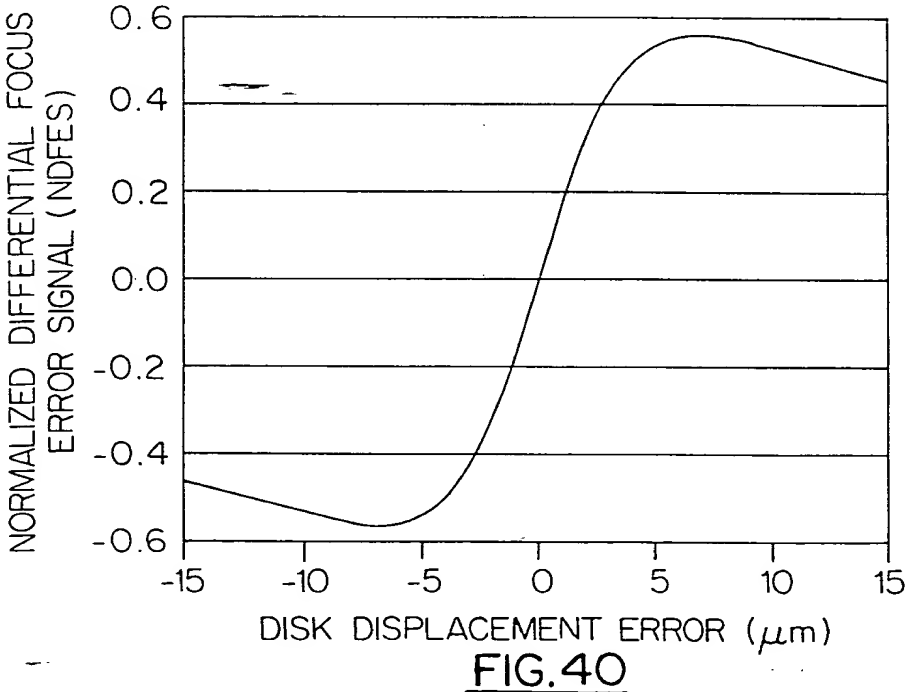

NORMALIZED DIFFERENTIAL FOCUS ERROR SIGNAL (NDFES)
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
-15
-10
-5
0
5
10
15
DISK DISPLACEMENT ERROR (μm)

FIG.40

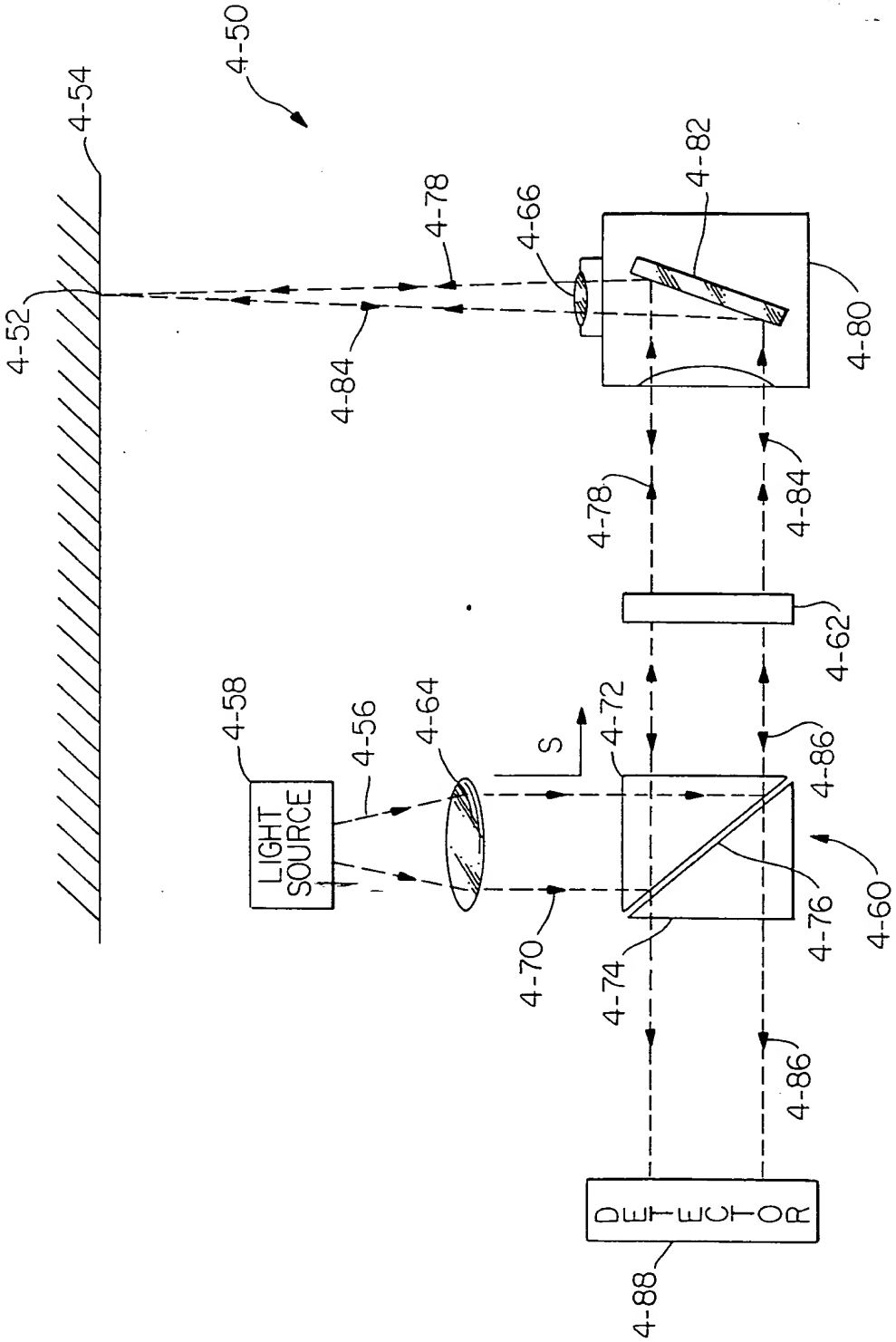

4-50
4-54
4-52
4-78
4-66
4-82
4-80
4-84
4-78
4-84
4-62
4-58
4-56
4-64
S
4-72
4-86
LIGHT SOURCE
4-60
4-76
4-70
4-74
4-86
DETECTOR
4-88

FIG.41

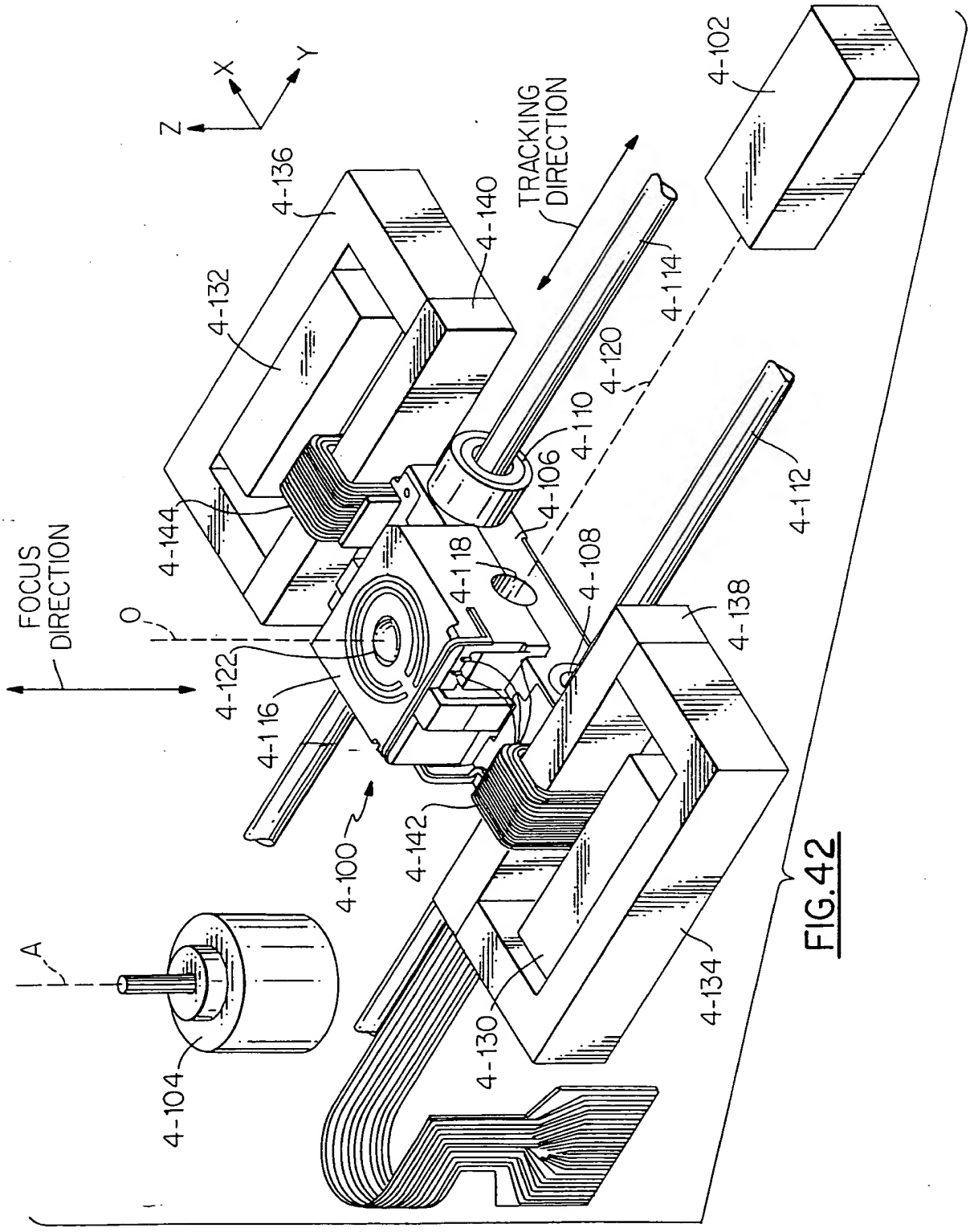

Z
X
Y
TRACKING DIRECTION
FOCUS DIRECTION
O
A
4-100
4-102
4-104
4-106
4-108
4-110
4-112
4-114
4-116
4-118
4-120
4-122
4-130
4-132
4-134
4-136
4-138
4-140
4-142
4-144

FIG.42

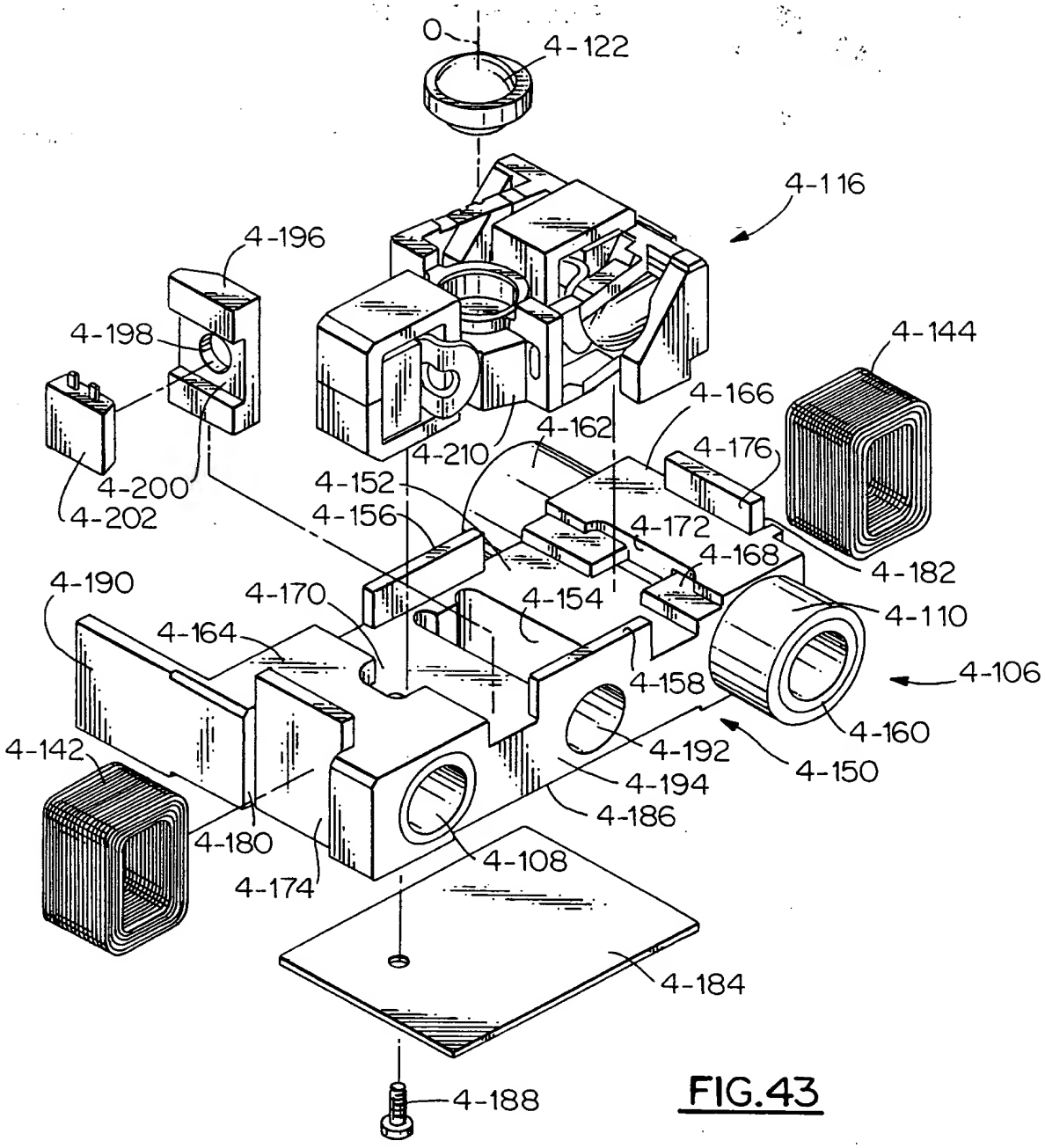

0
4-122
4-116
4-196
4-198
4-144
4-166
4-162
4-210
4-176
4-200
4-202
4-152
4-156
4-172
4-168
4-182
4-190
4-170
4-154
4-110
4-164
4-106
4-158
4-160
4-142
4-192
4-150
4-194
4-186
4-180
4-108
4-174
4-184
4-188

FIG.43

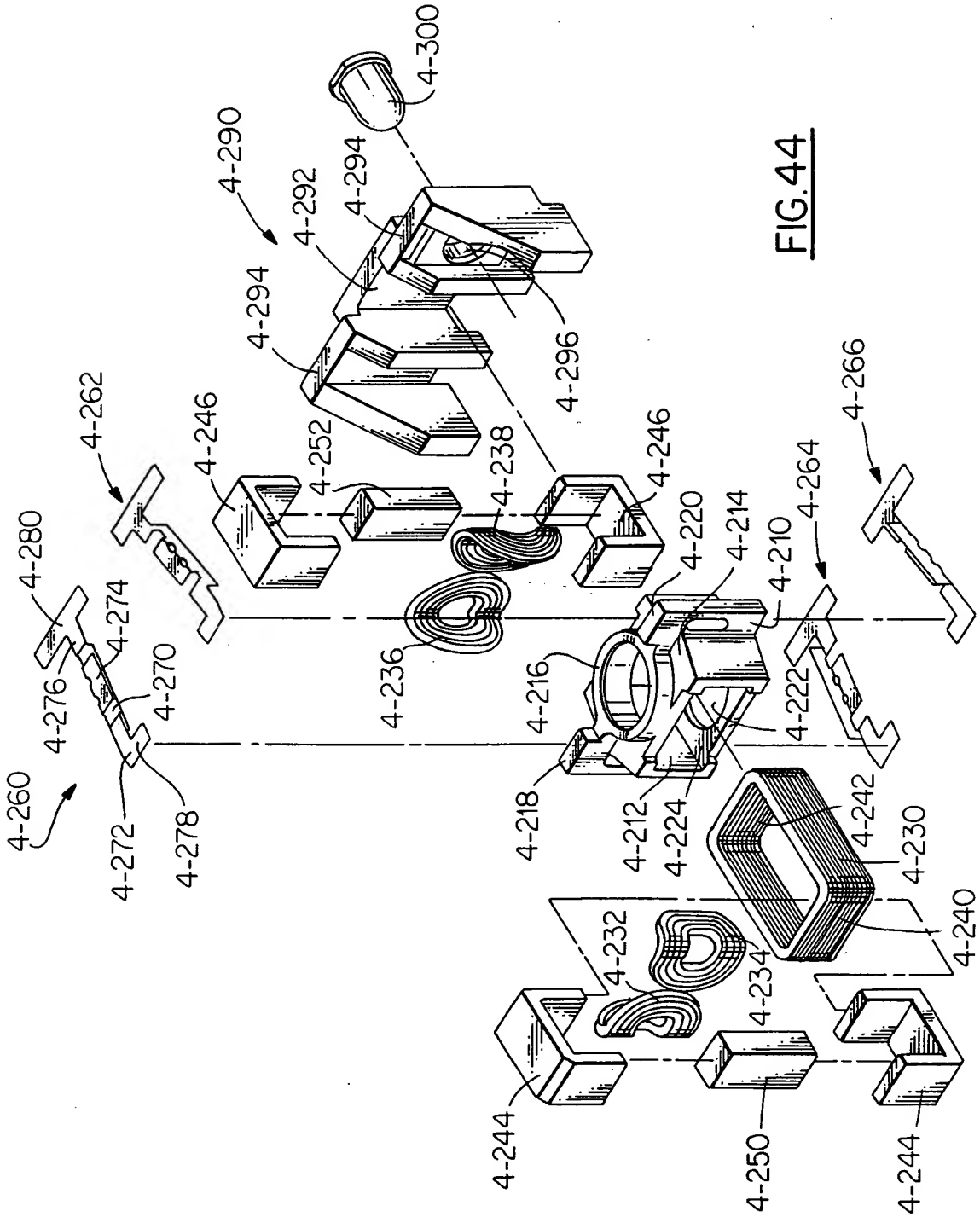

4-300
4-290
4-292
4-294
4-294
4-296
4-262
4-246
4-252
4-238
4-246
4-266
4-280
4-274
4-220
4-214
4-210
4-264
4-270
4-276
4-236
4-216
4-222
4-260
4-272
4-278
4-218
4-212
4-224
4-242
4-230
4-240
4-232
4-234
4-244
4-250
4-244

FIG.44

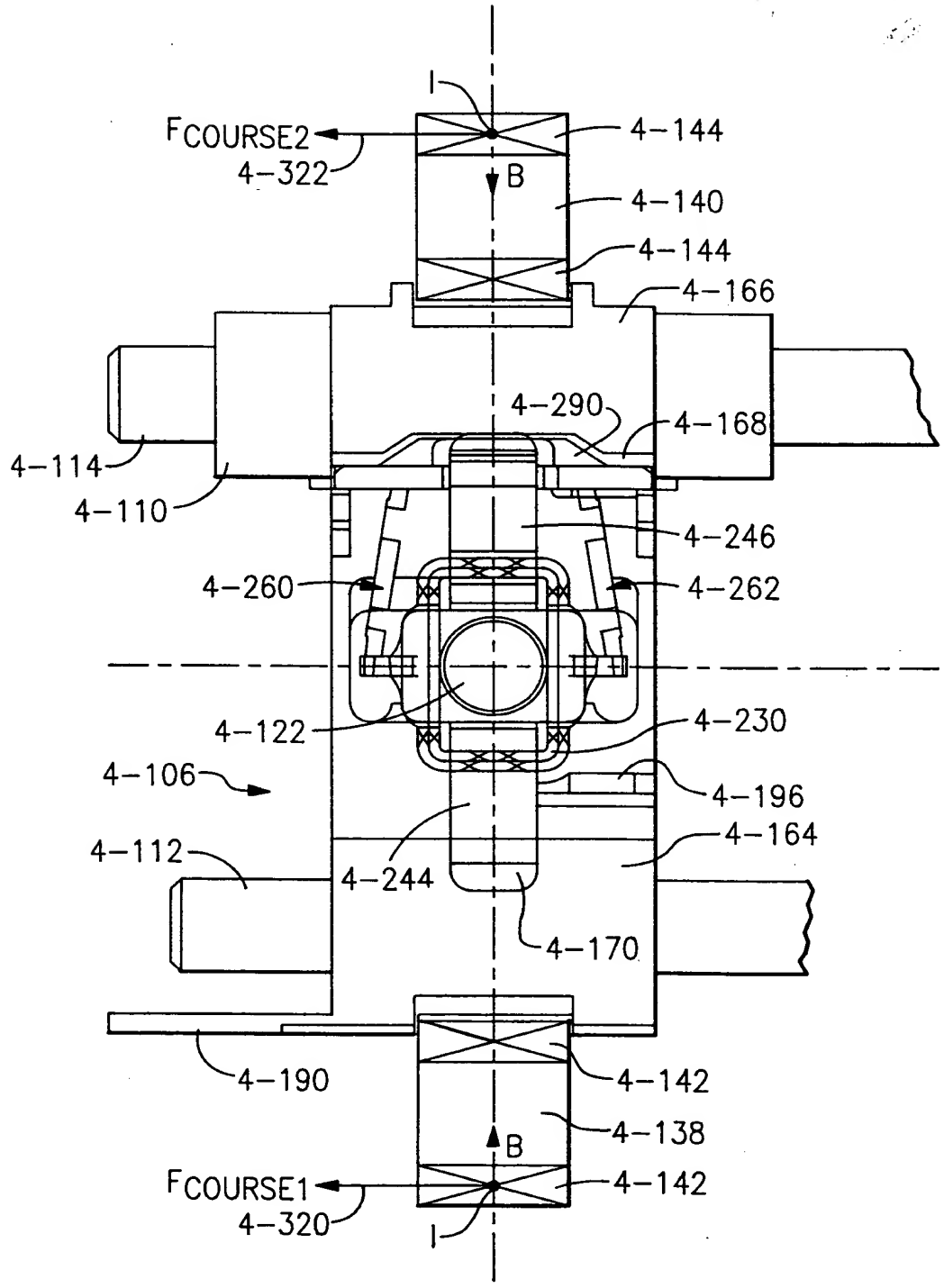

I
FCOURSE2
4-322
B
4-144
4-140
4-144
4-166
4-290
4-168
4-114
4-110
4-246
4-260
4-262
4-122
4-230
4-106
4-196
4-164
4-112
4-244
4-170
4-190
4-142
4-138
B
FCOURSE1
4-320
4-142
I

FIG.45

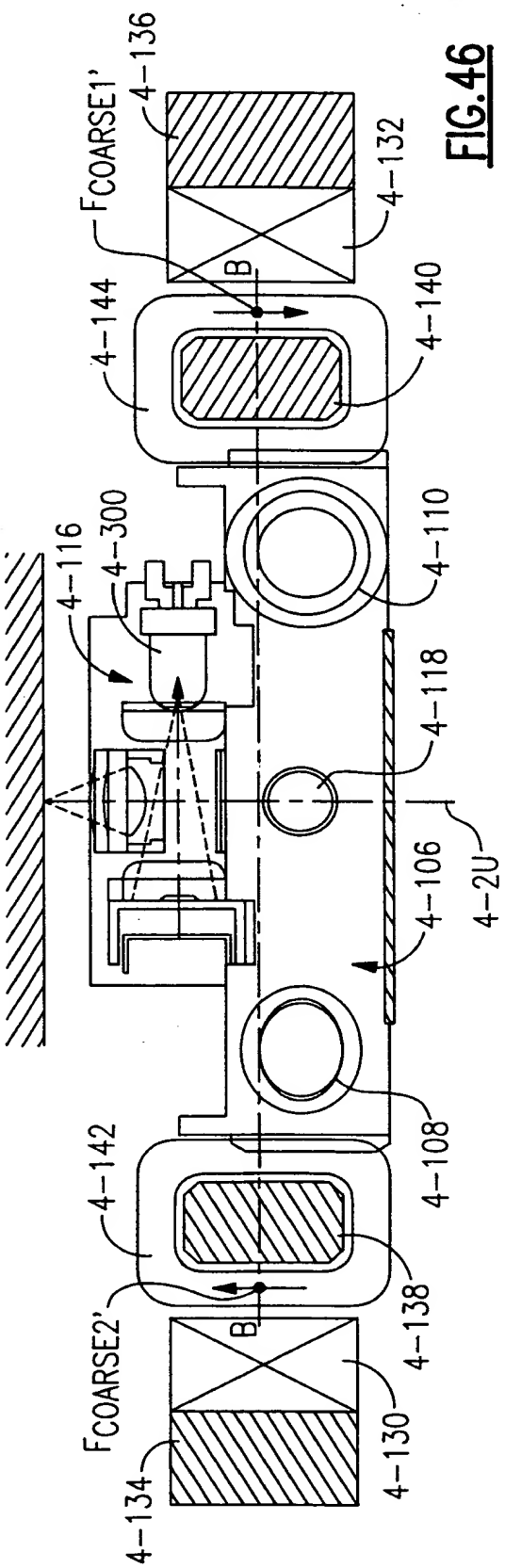


FIG.46

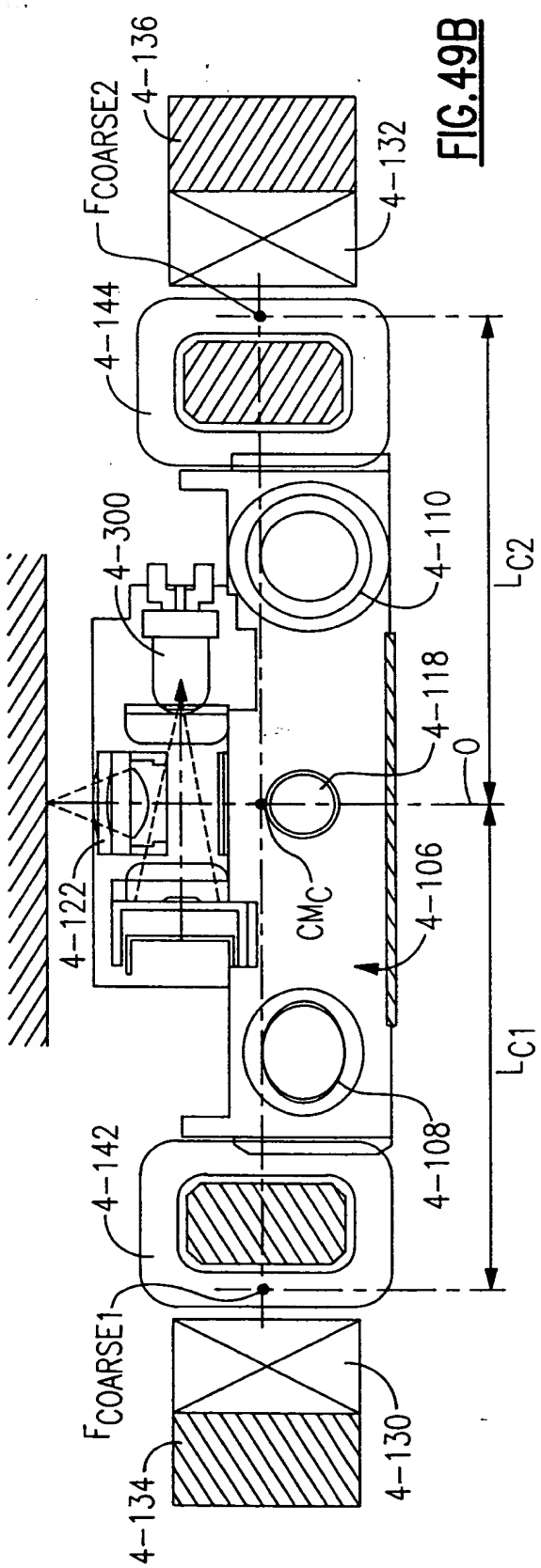


FIG.49B

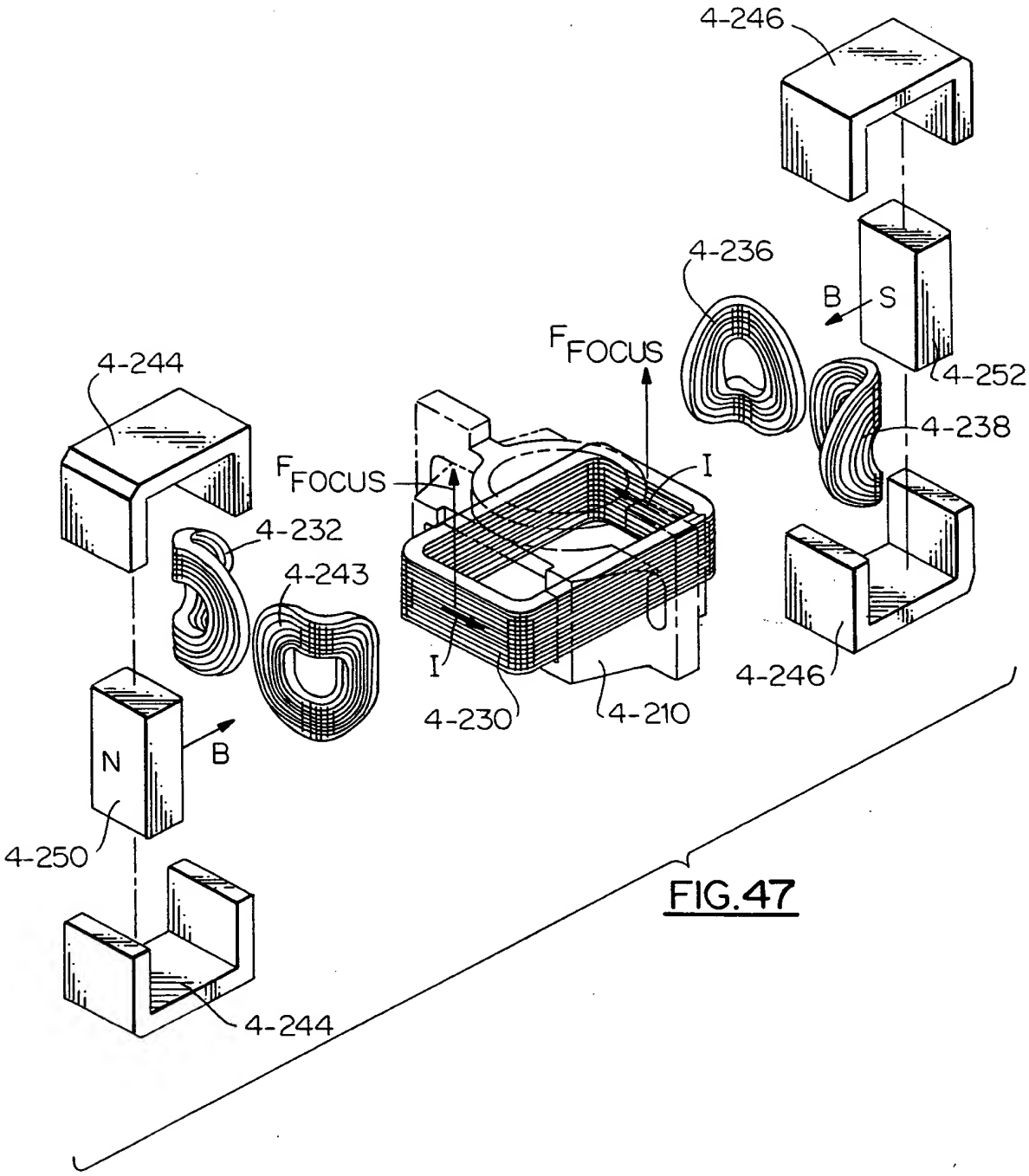

4-246
4-236
B
S
4-252
F FOCUS
4-238
4-244
F FOCUS
I
4-232
4-243
I
4-230
4-210
4-246
N
B
4-250
4-244

FIG.47

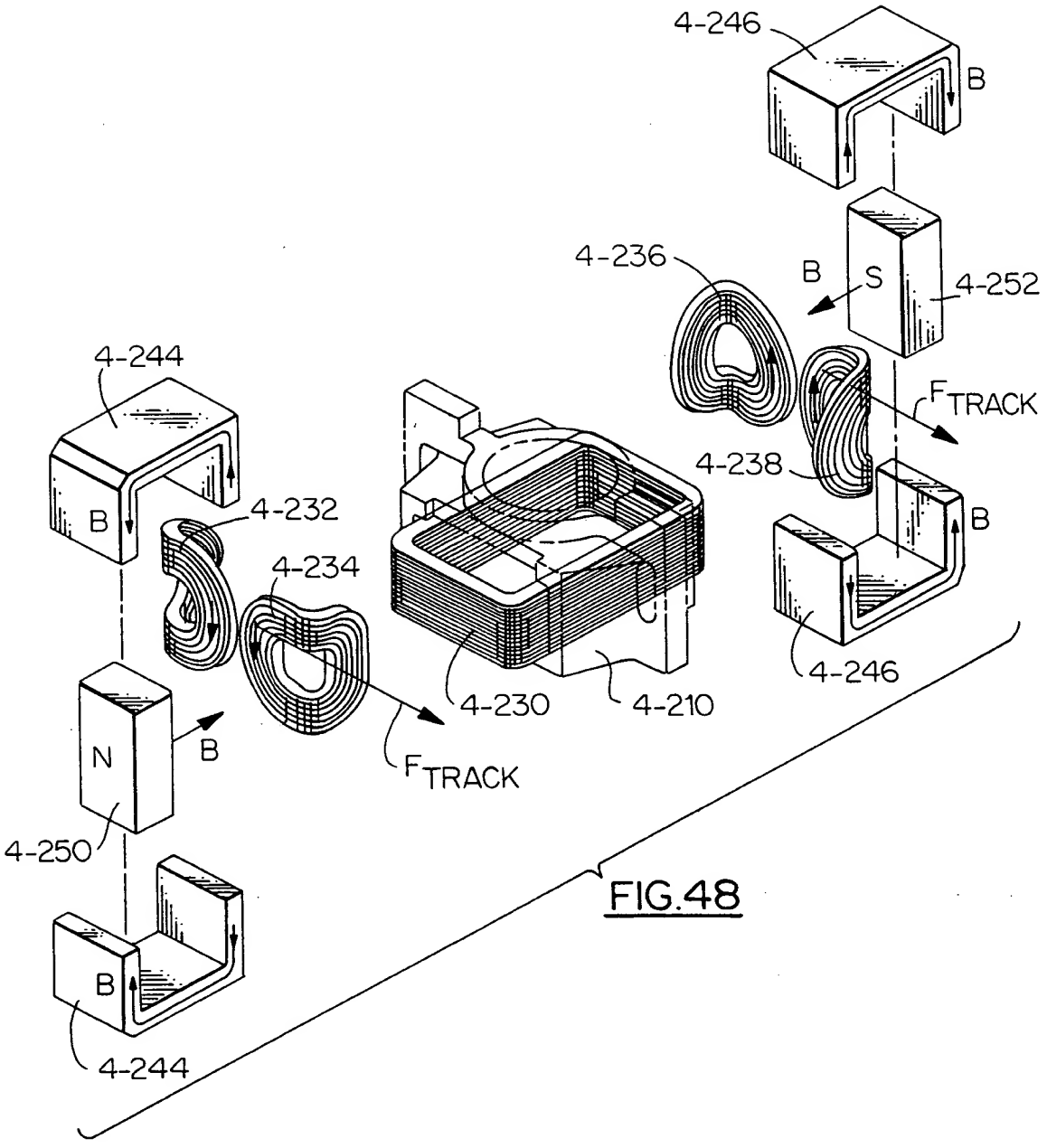

4-246
B
4-236
B
S
4-252
4-244
F TRACK
4-238
B
4-232
4-234
B
4-246
4-230
4-210
N
B
F TRACK
4-250
B
4-244

FIG.48

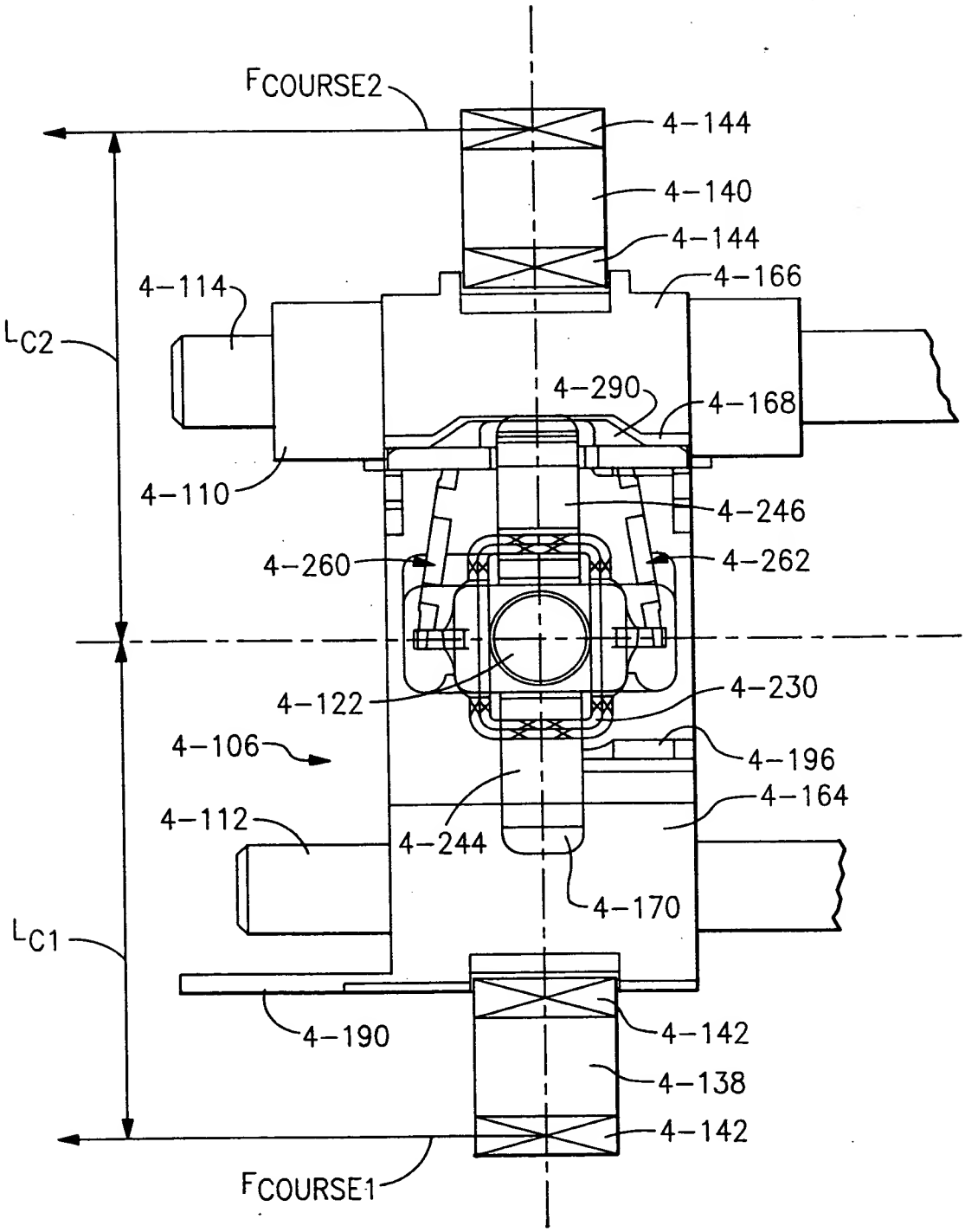

FCOURSE2
4-144
4-140
4-144
4-166
4-114
LC2
4-290
4-168
4-110
4-246
4-260
4-262
4-122
4-230
4-106
4-196
4-164
4-112
4-244
4-170
LC1
4-190
4-142
4-138
4-142
FCOURSE1

FIG.49A

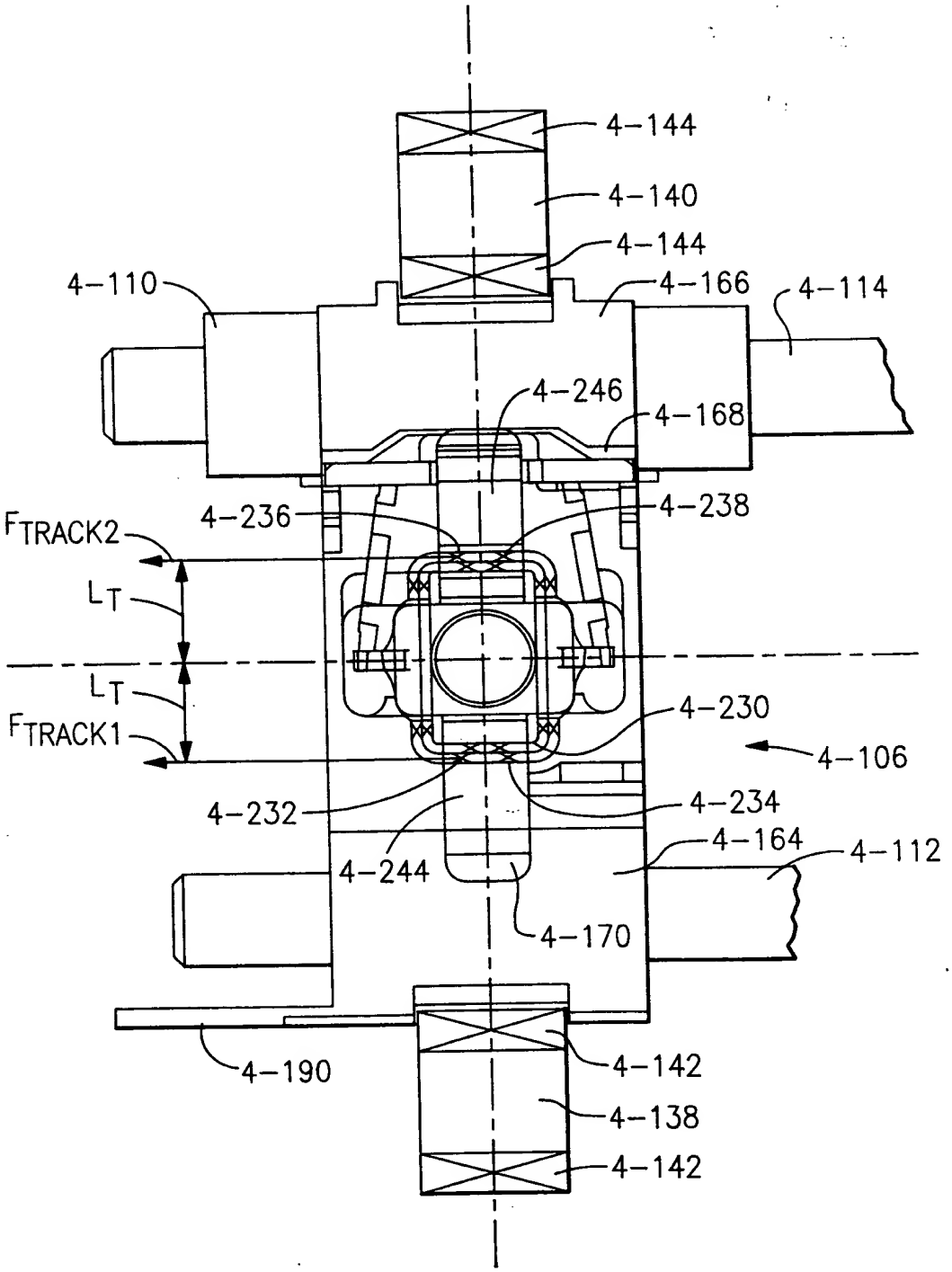

4-144
4-140
4-144
4-110
4-166
4-114
4-246
4-168
4-236
4-238
FTRACK2
LT
LT
FTRACK1
4-230
4-106
4-232
4-234
4-164
4-112
4-244
4-170
4-190
4-142
4-138
4-142

FIG.50A

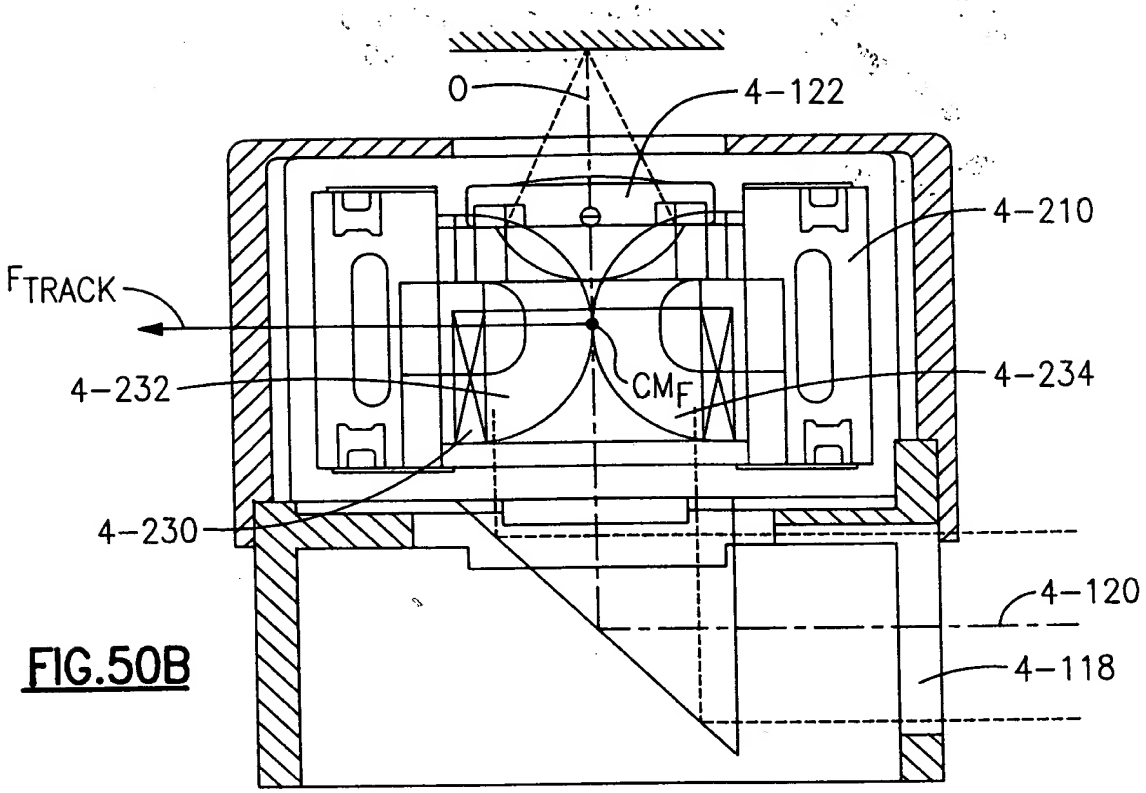


FIG.50B

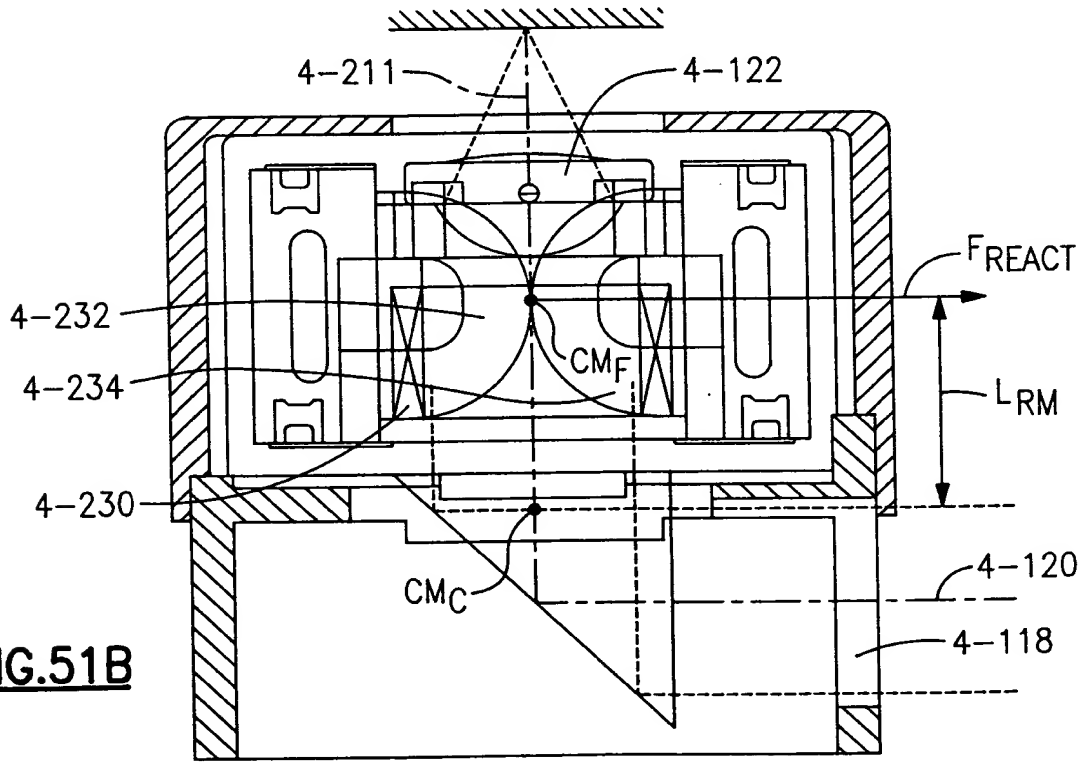


FIG.51B

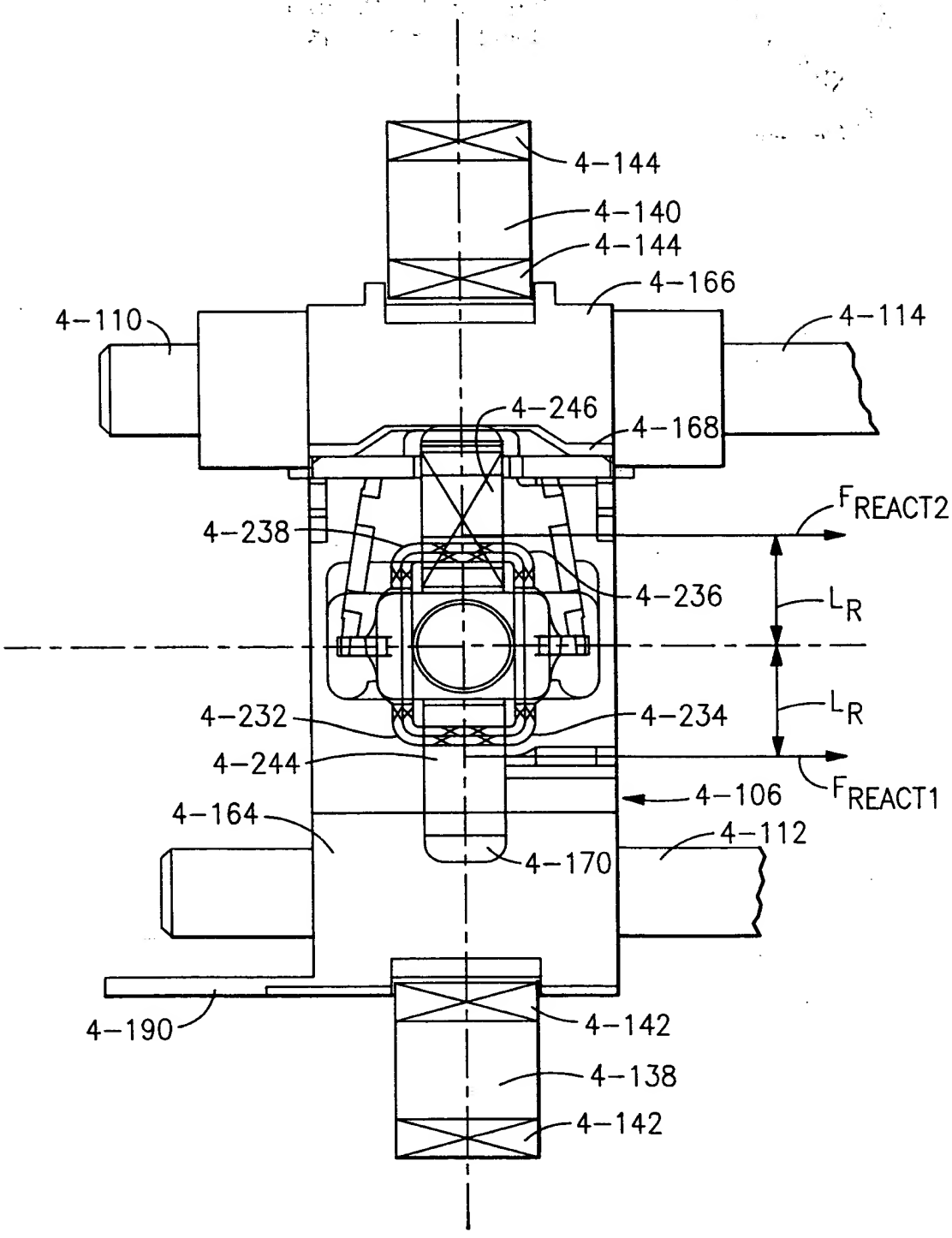

4-144
4-140
4-144
4-166
4-110
4-114
4-246
4-168
F REACT2
4-238
4-236
L R
L R
4-232
4-234
4-244
4-106
F REACT1
4-164
4-112
4-170
4-190
4-142
4-138
4-142

FIG.51A

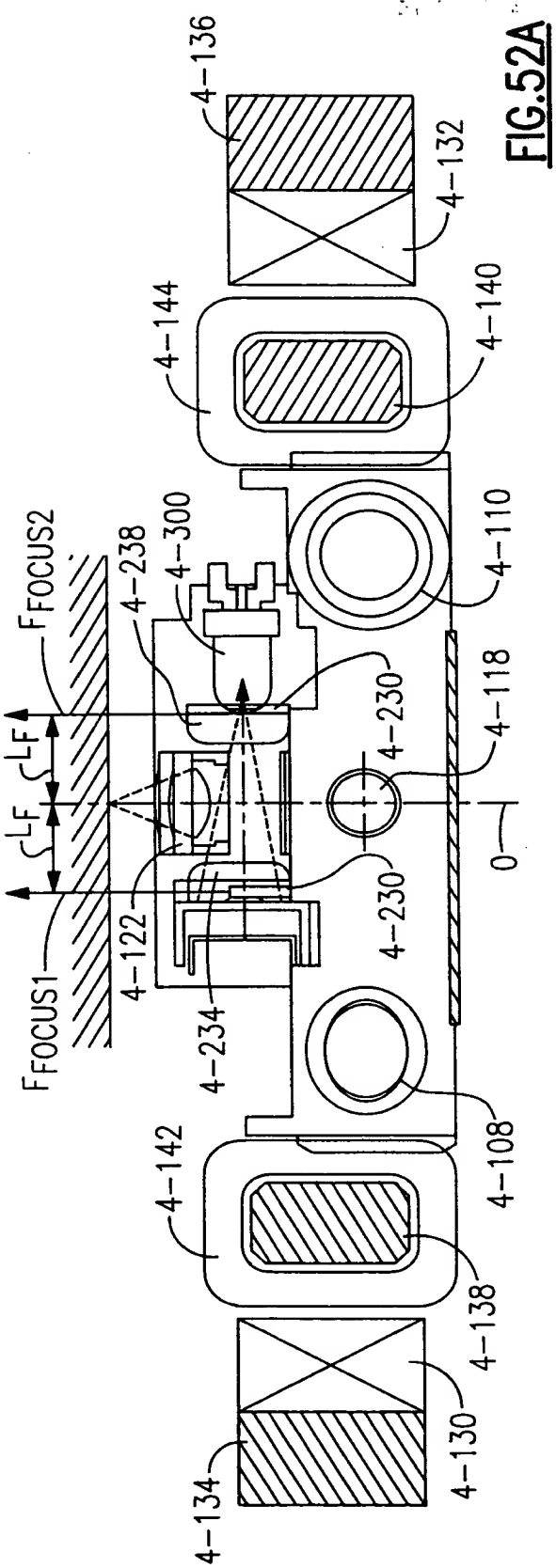


FIG.52A

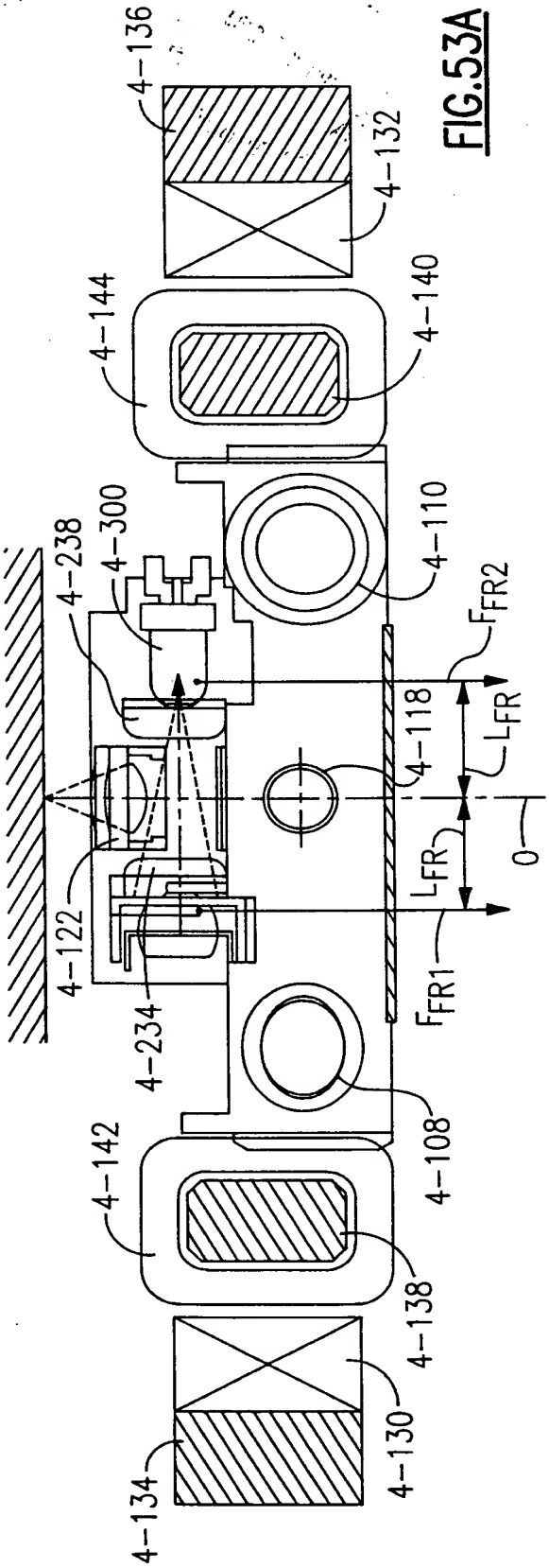


FIG.53A

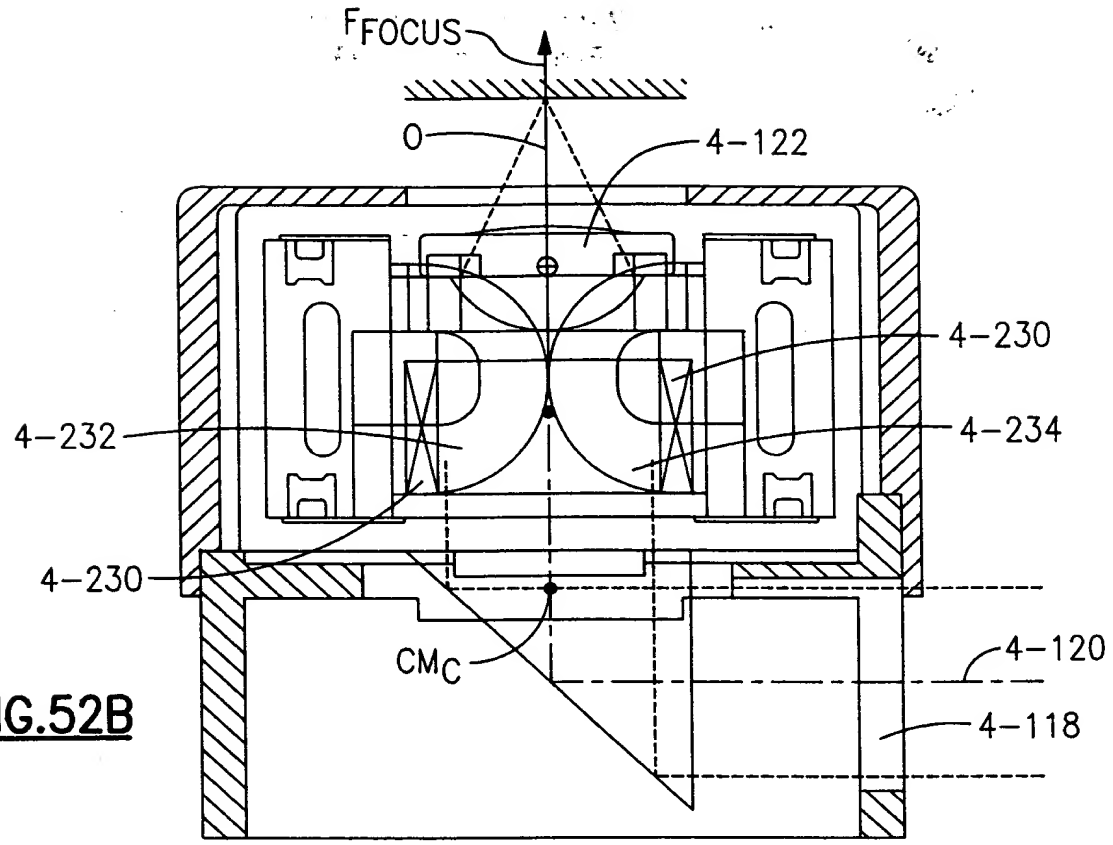


FIG.52B

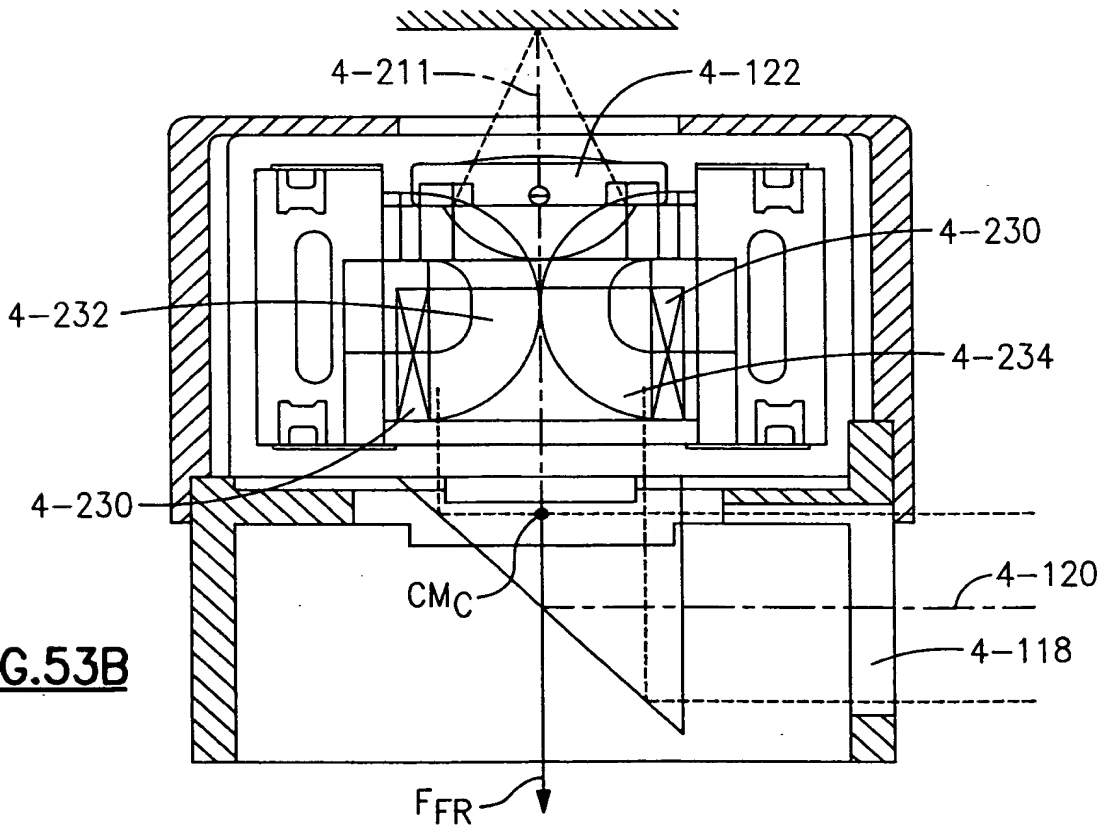


FIG.53B

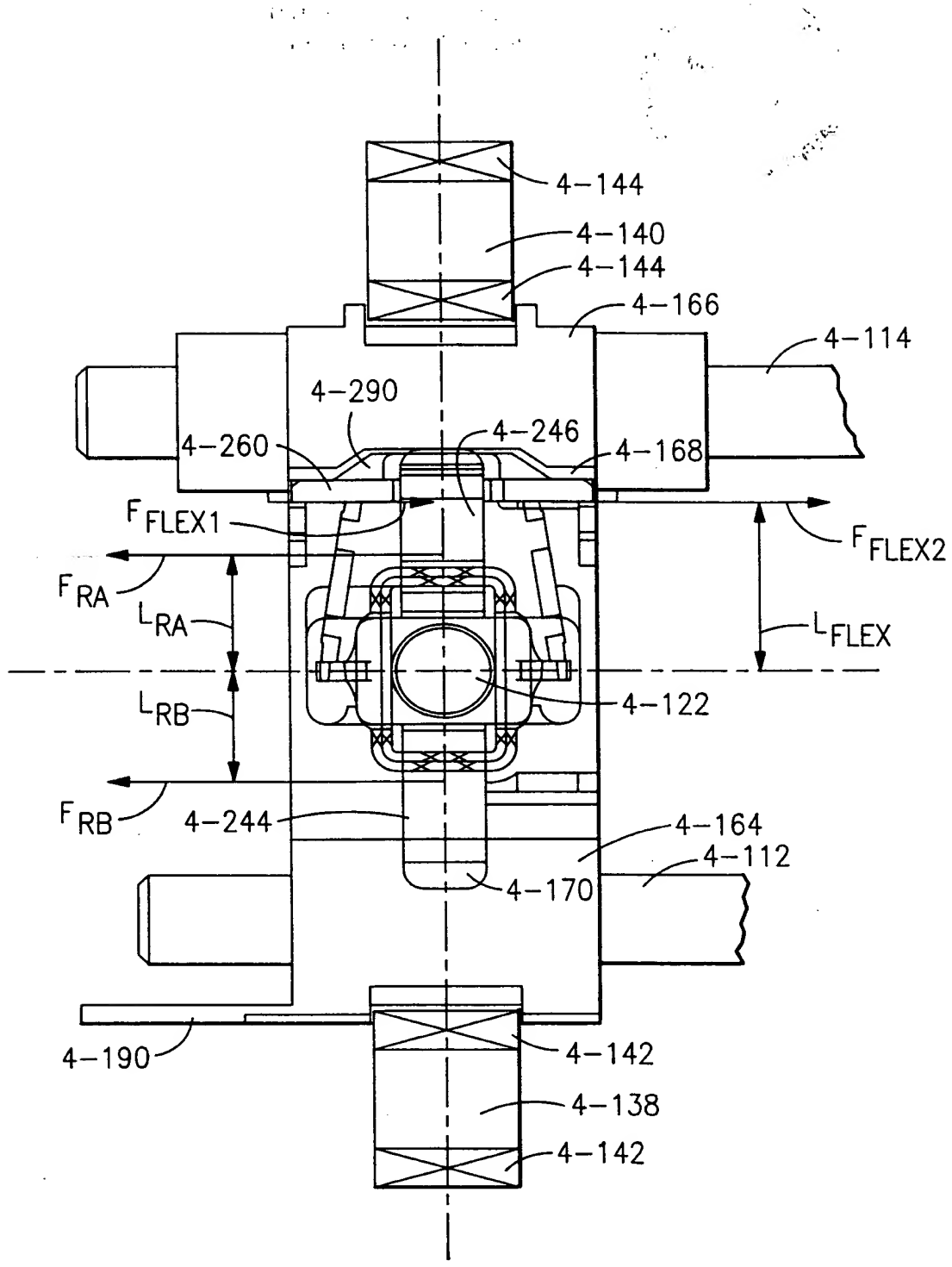

4-144
4-140
4-144
4-166
4-114
4-290
4-260
4-246
4-168
F FLEX1
F FLEX2
F RA
L RA
L FLEX
L RB
4-122
F RB
4-244
4-164
4-112
4-170
4-190
4-142
4-138
4-142

FIG.54

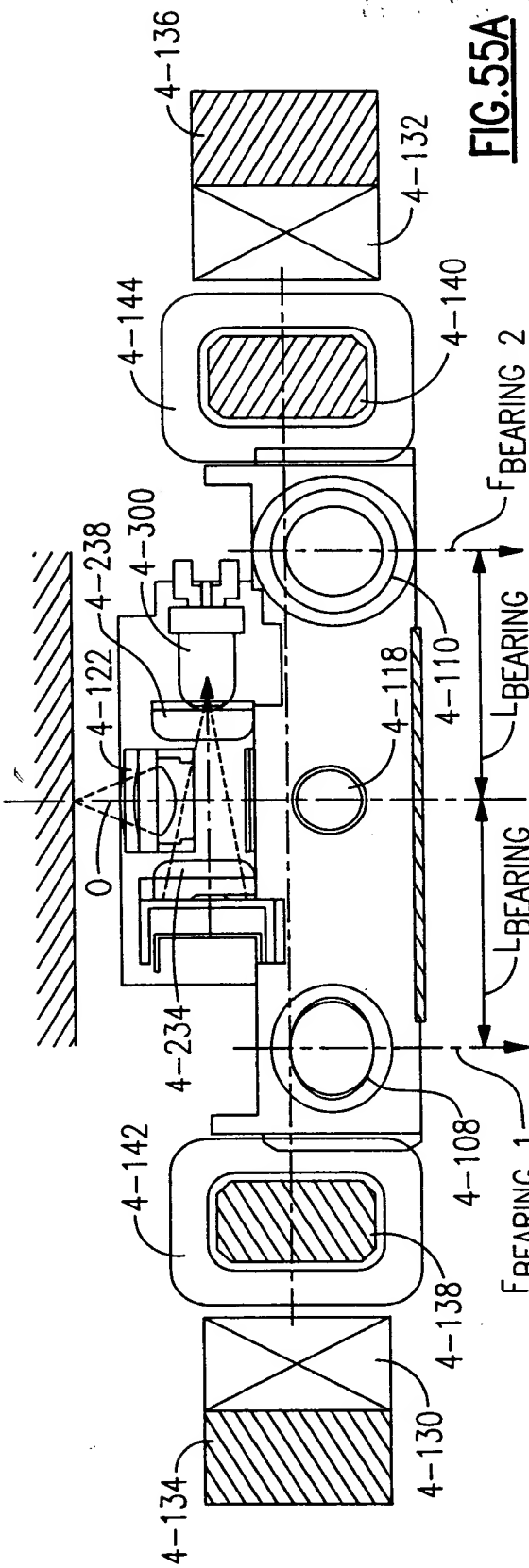


FIG.55A

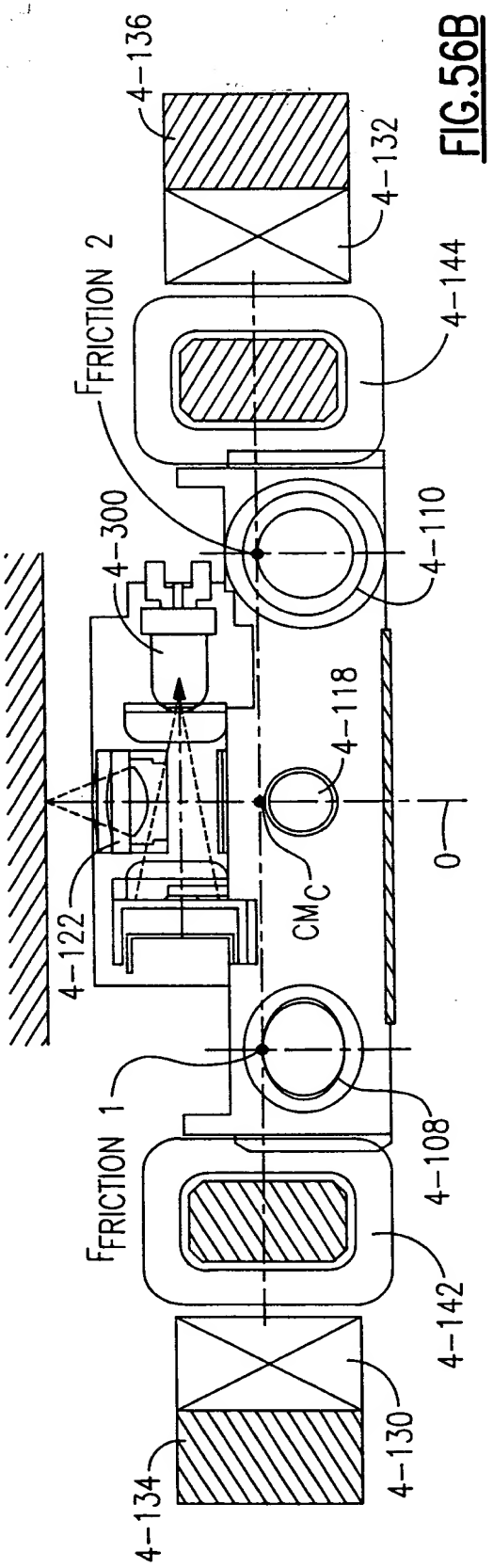


FIG.56B

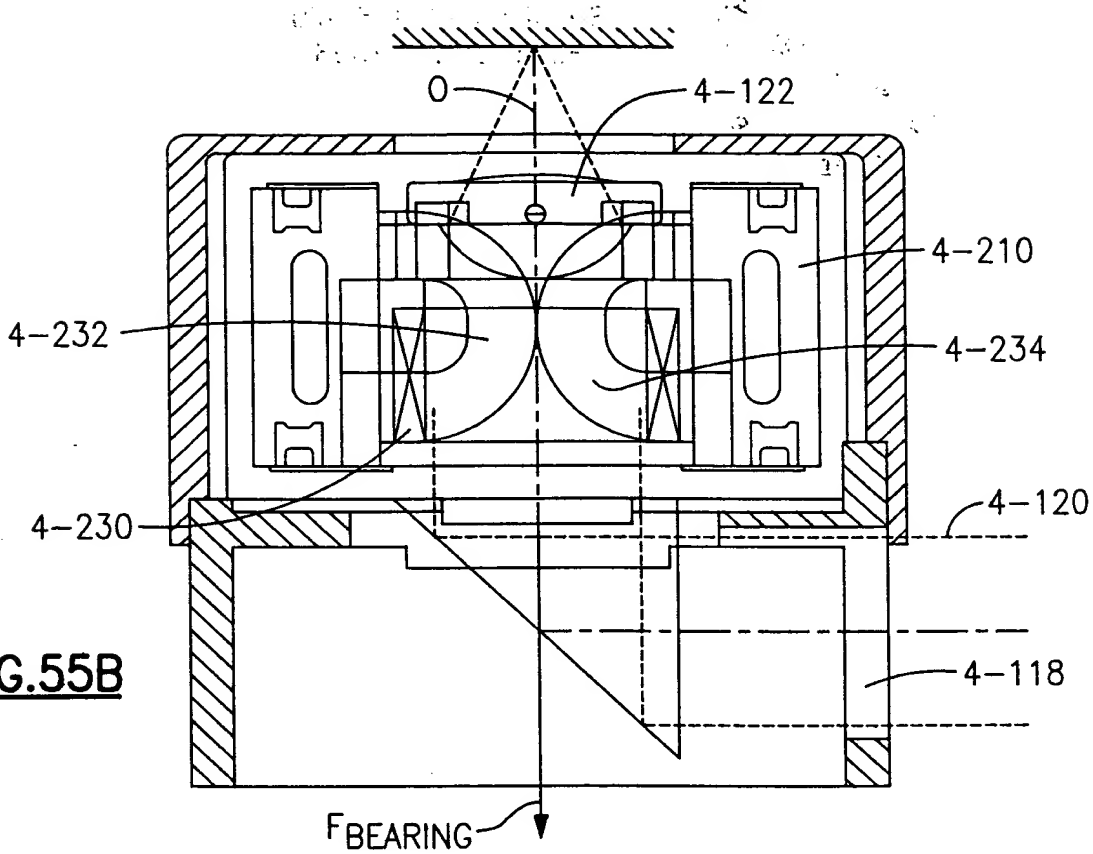


FIG.55B

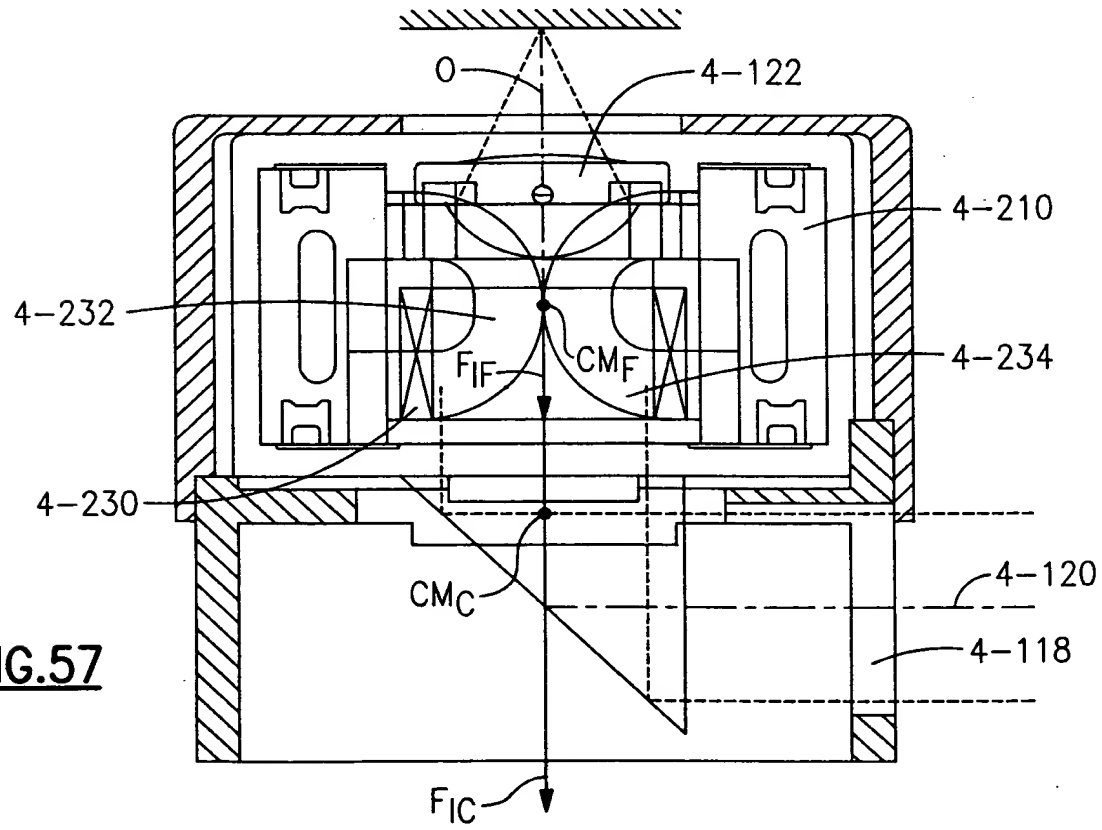


FIG.57

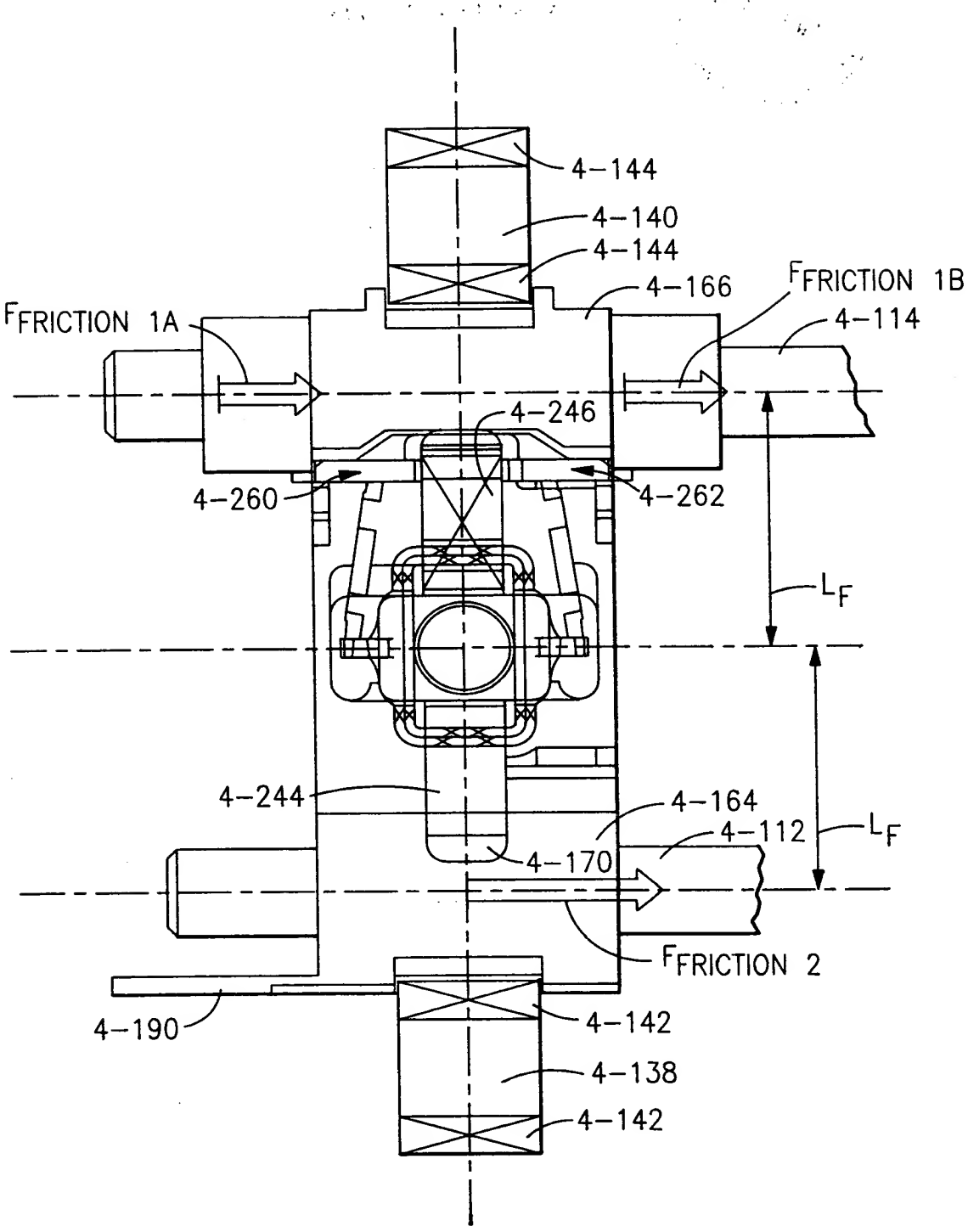

4-144
4-140
4-144
4-166
FFRICTION 1B
FFRICTION 1A
4-114
4-246
4-260
4-262
LF
4-244
4-164
4-112
LF
4-170
FFRICTION 2
4-190
4-142
4-138
4-142

FIG.56A

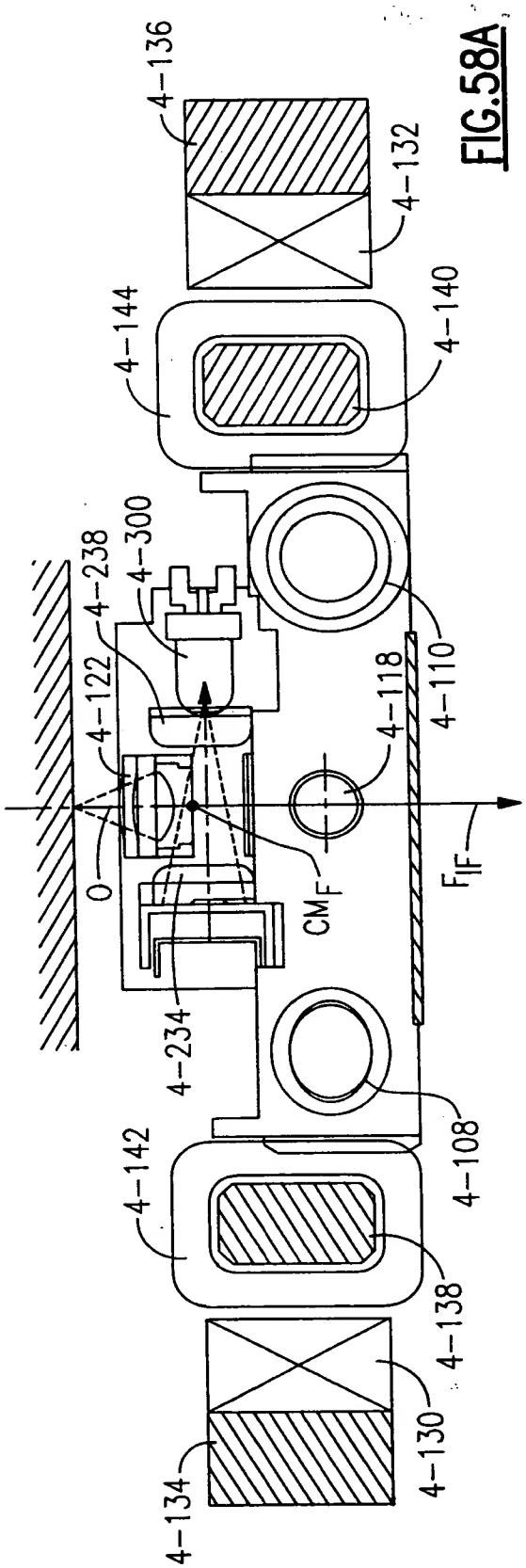


FIG.58A

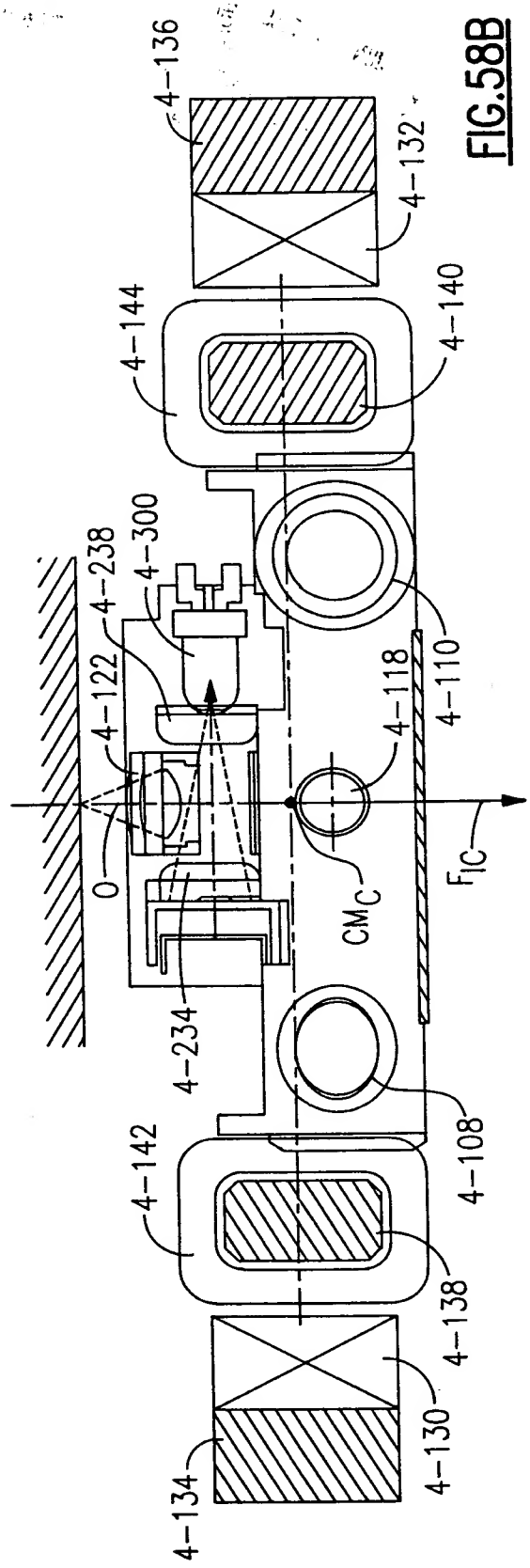


FIG.58B

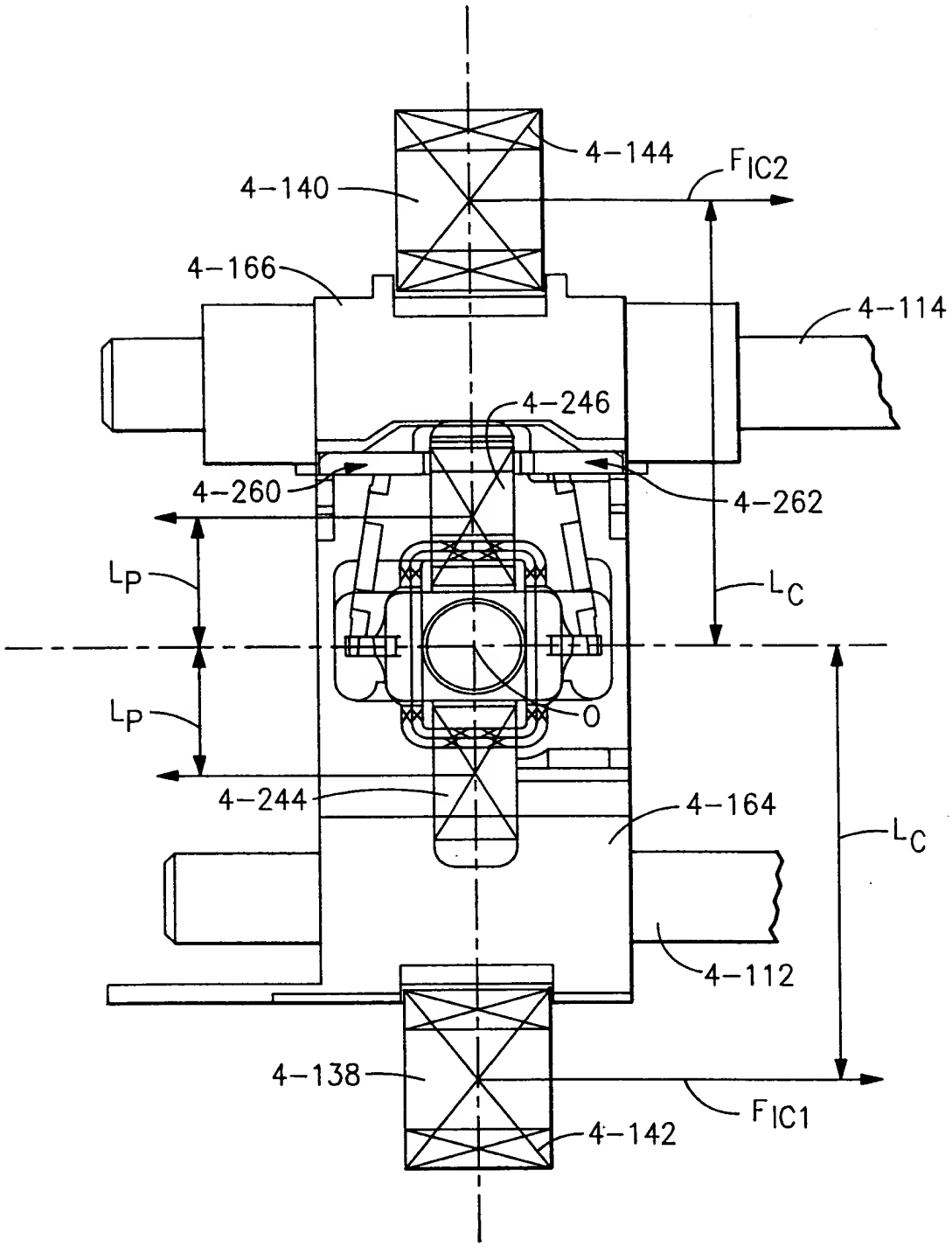

4-144
FIC2
4-140
4-166
4-114
4-246
4-260
4-262
LP
LC
LP
0
4-244
4-164
LC
4-112
4-138
FIC1
4-142

FIG.59A

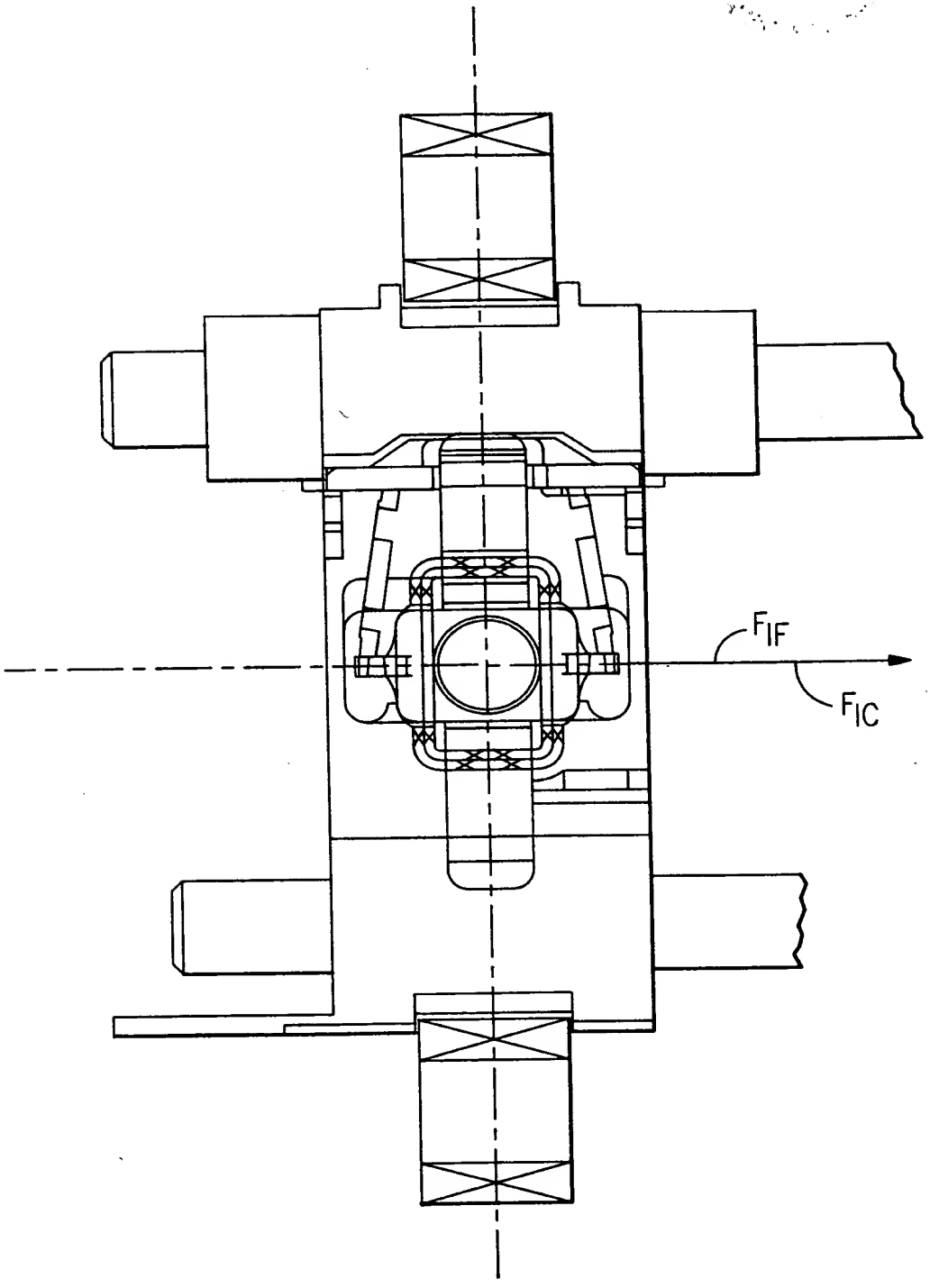


FIG.59B

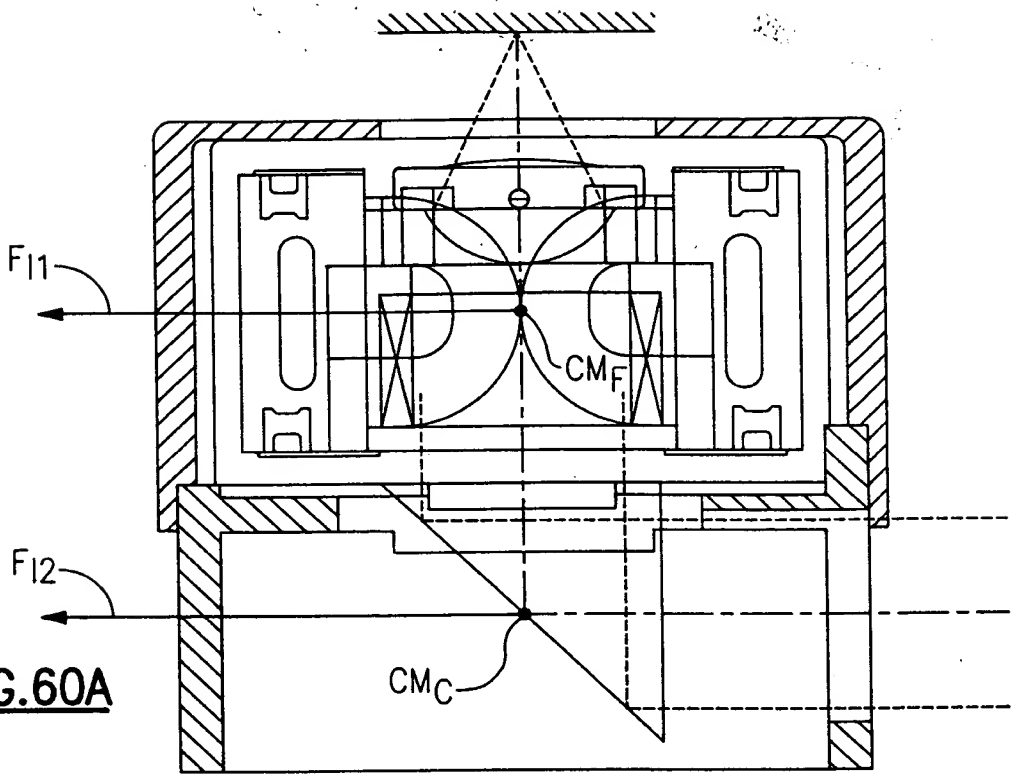


FIG.60A

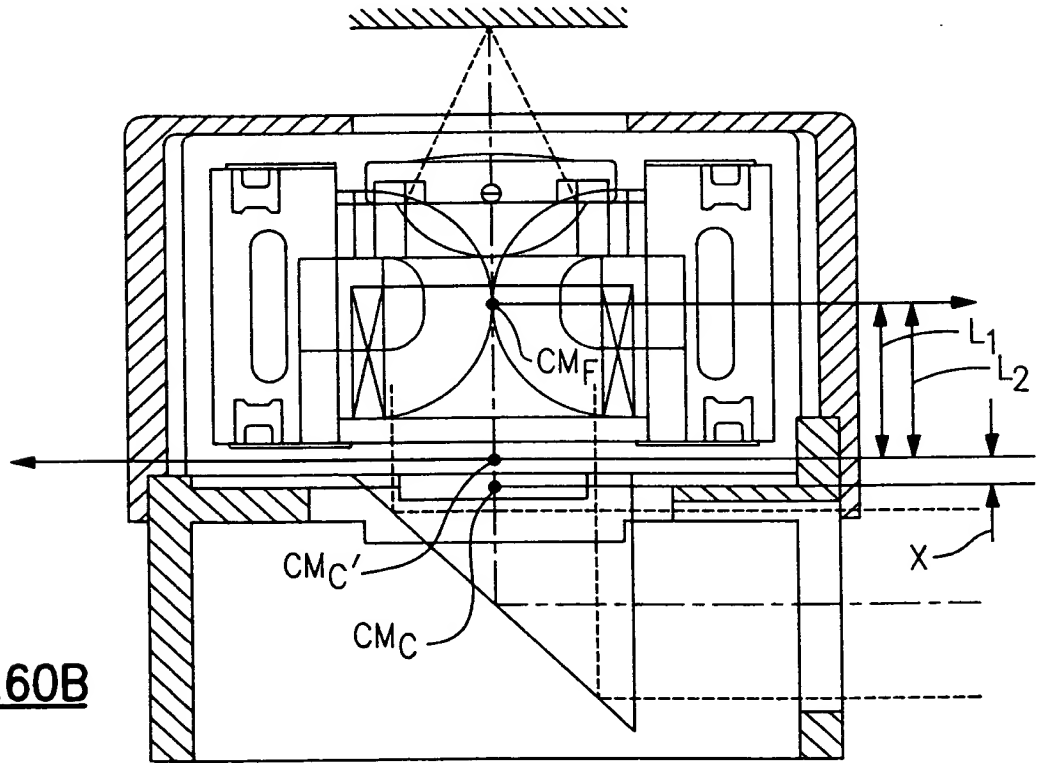


FIG.60B

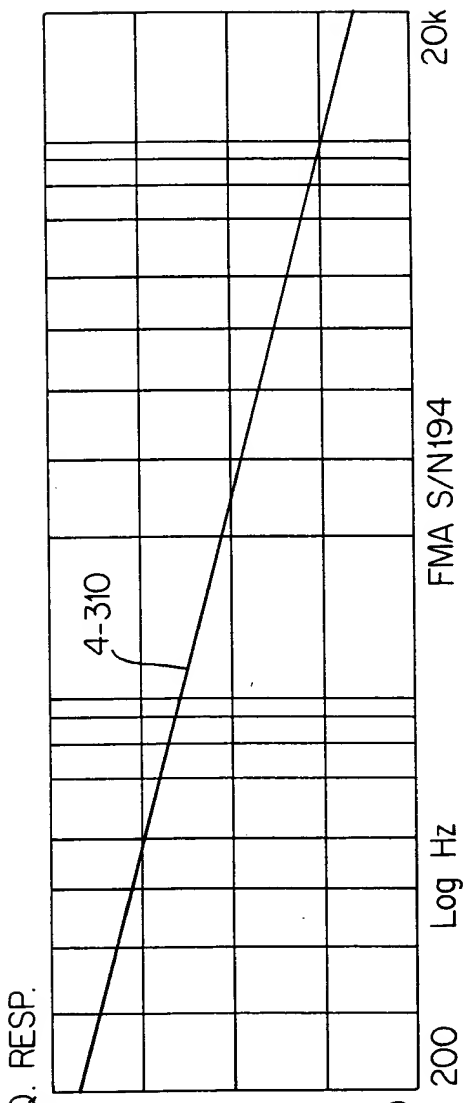


FIG.61A

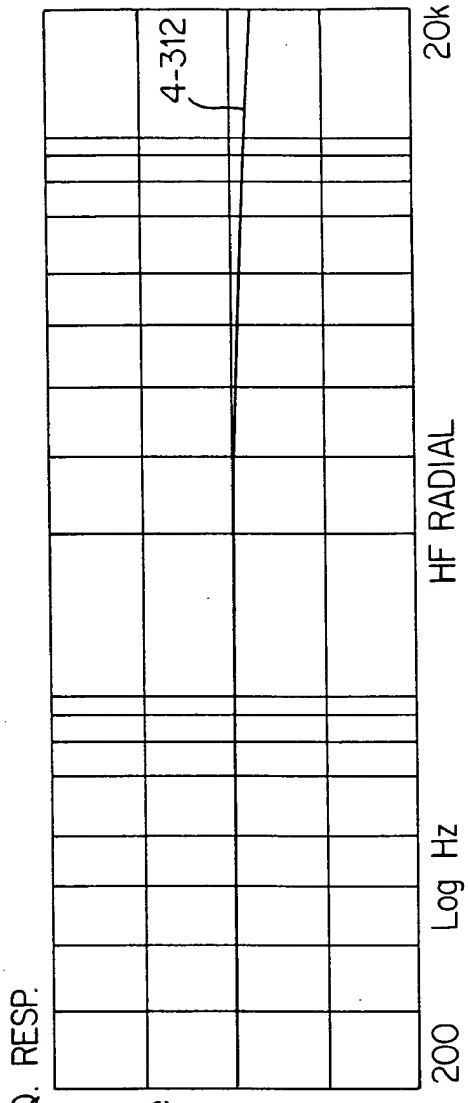


FIG.61B

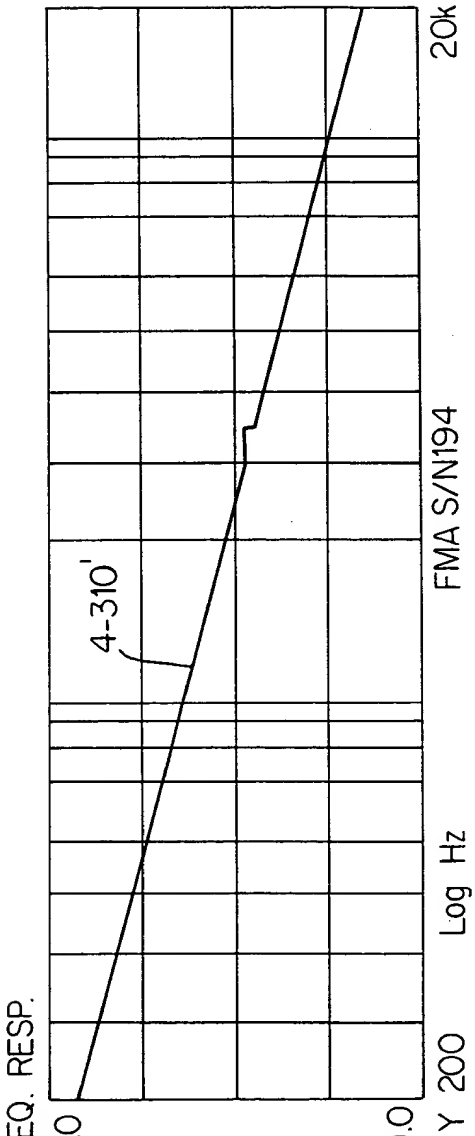


FIG.61C

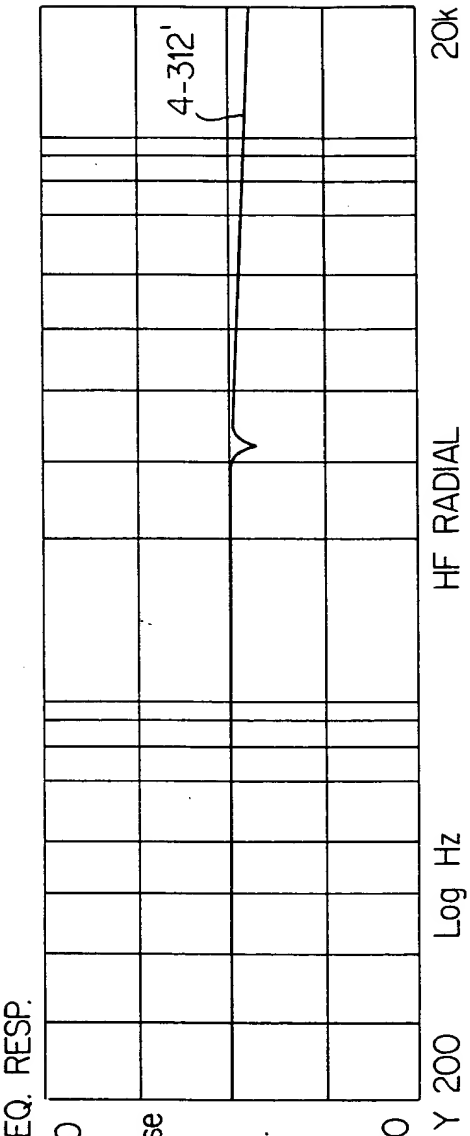


FIG.61D

FIG.62A

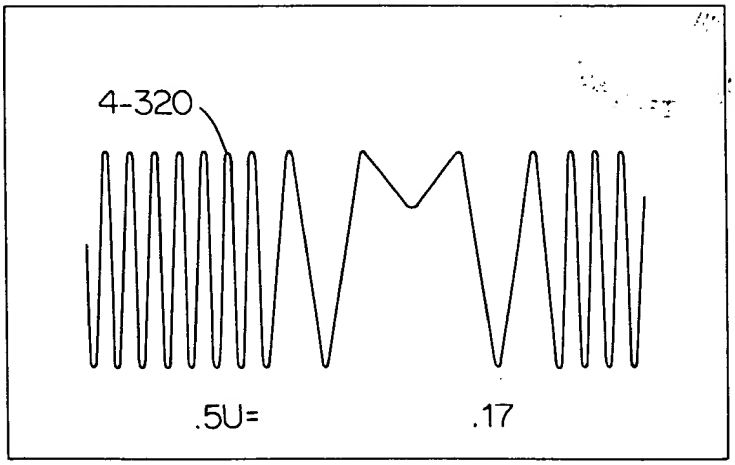


FIG.62B

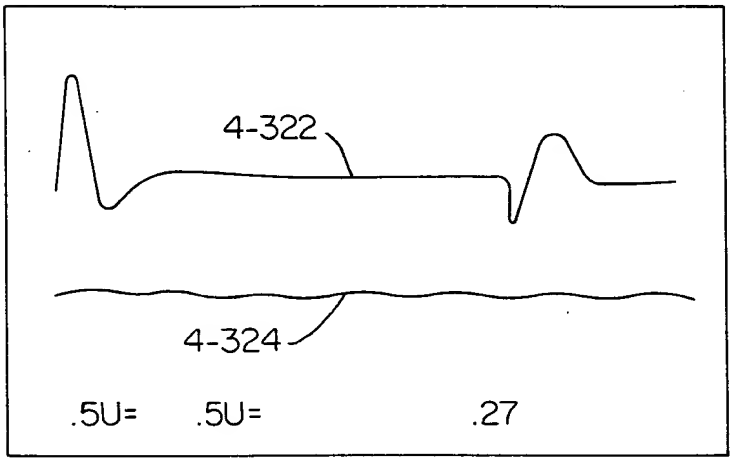
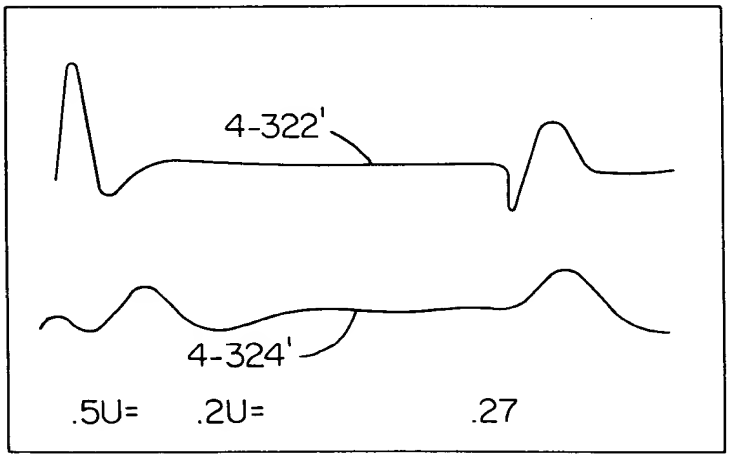


FIG.62C



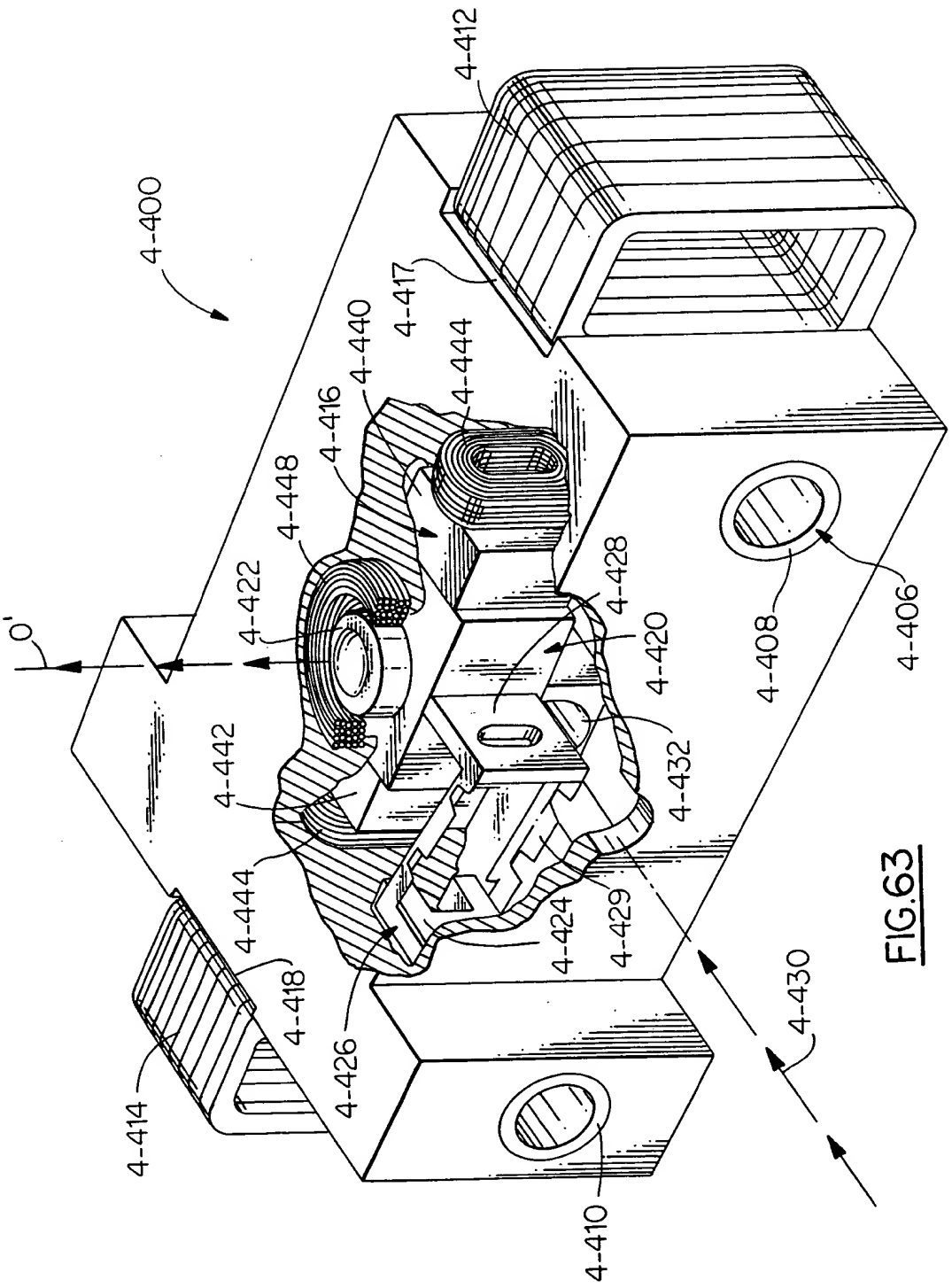

4-400
4-412
4-417
4-440
4-444
4-416
4-448
4-422
4-428
4-420
4-442
4-432
4-444
4-424
4-429
4-418
4-426
4-414
4-410
4-430
4-408
4-406
O'

FIG.63

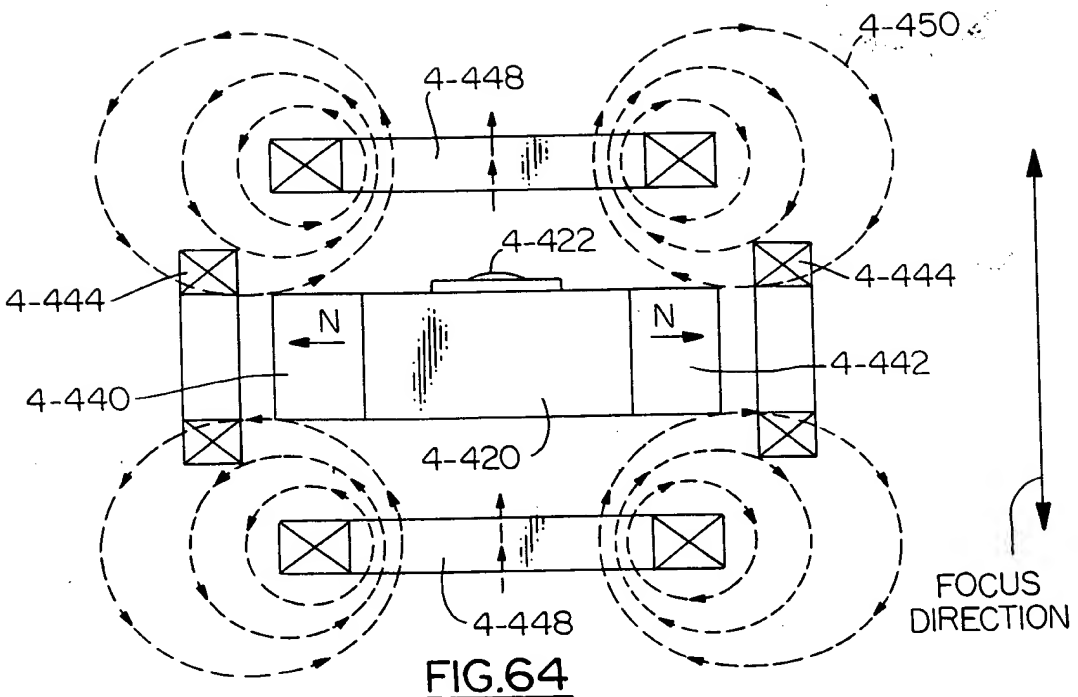

4-450
4-448
4-422
4-444
4-444
N
N
4-442
4-440
4-420
4-448
FOCUS
DIRECTION

FIG.64

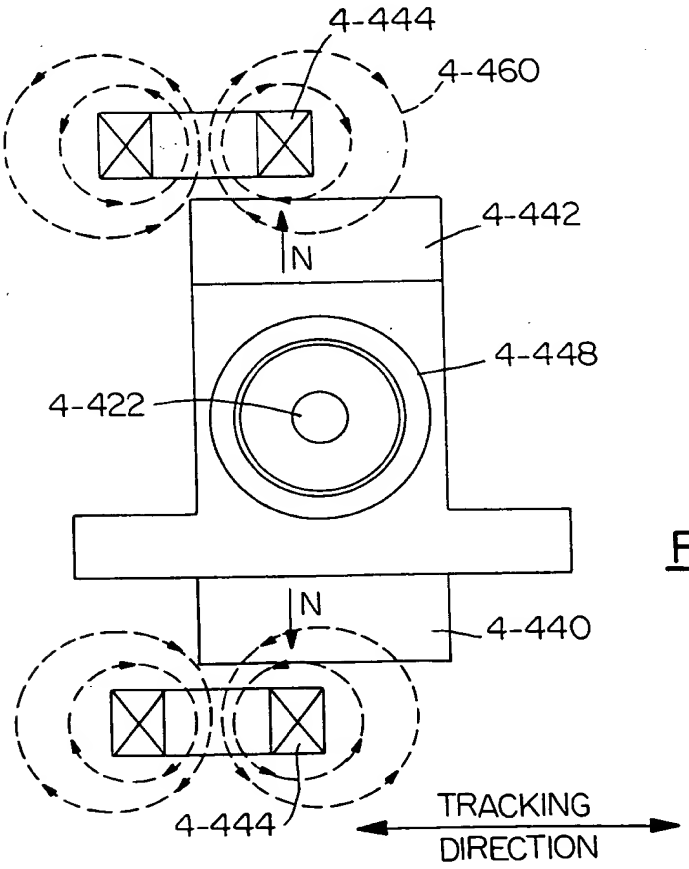

4-444
4-460
4-442
N
4-448
4-422
N
4-440
4-444
TRACKING
DIRECTION

FIG.65

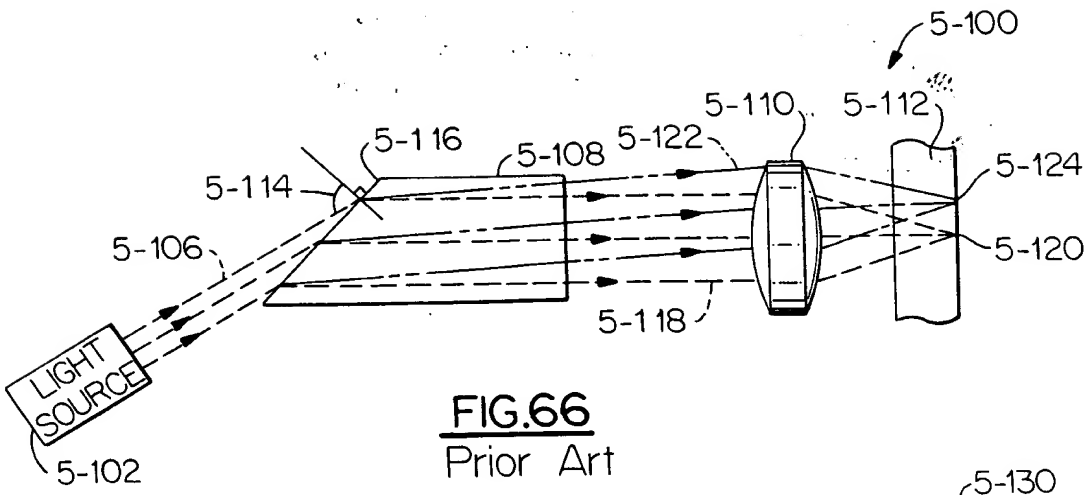


FIG.66
Prior Art

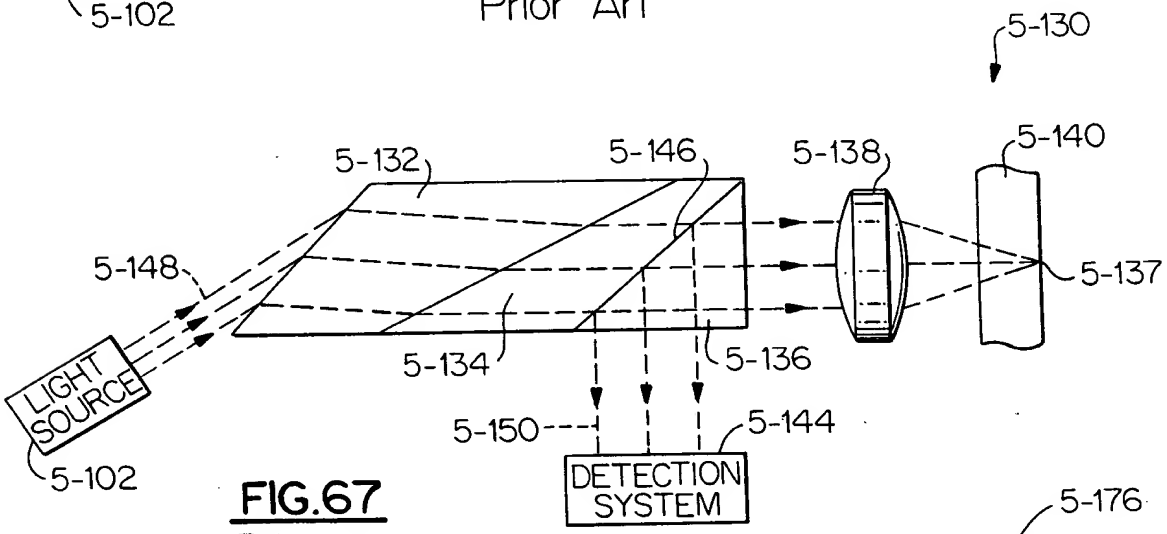


FIG.67
Prior Art

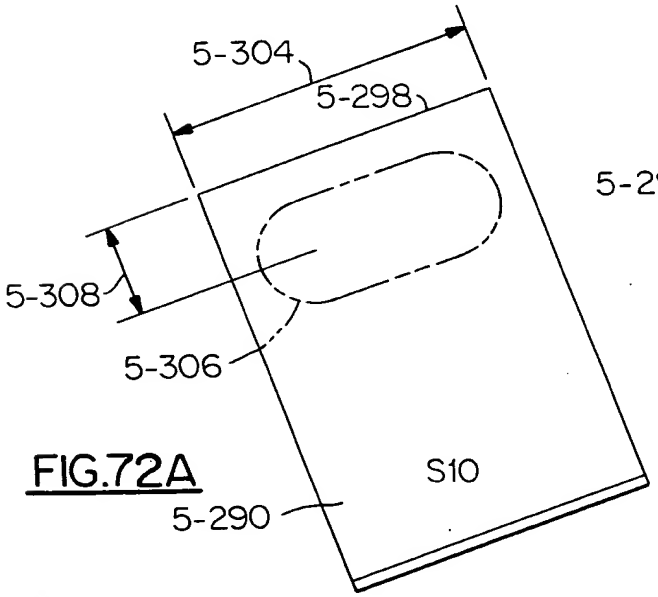


FIG.72A

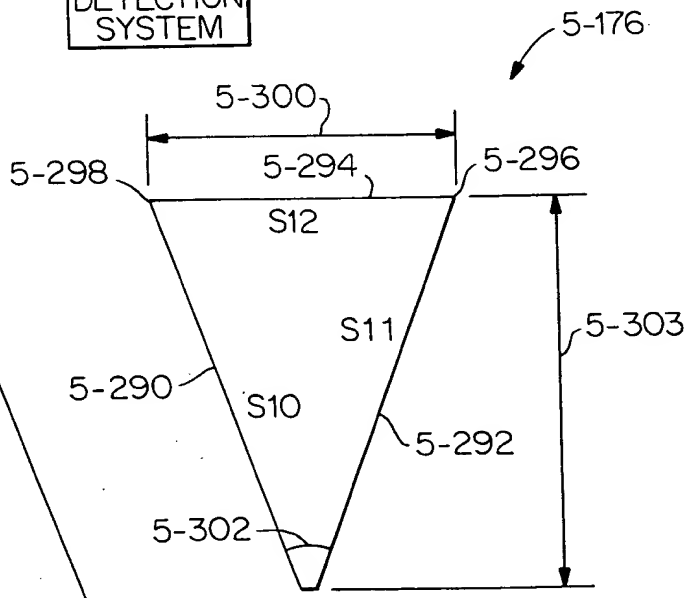


FIG.72

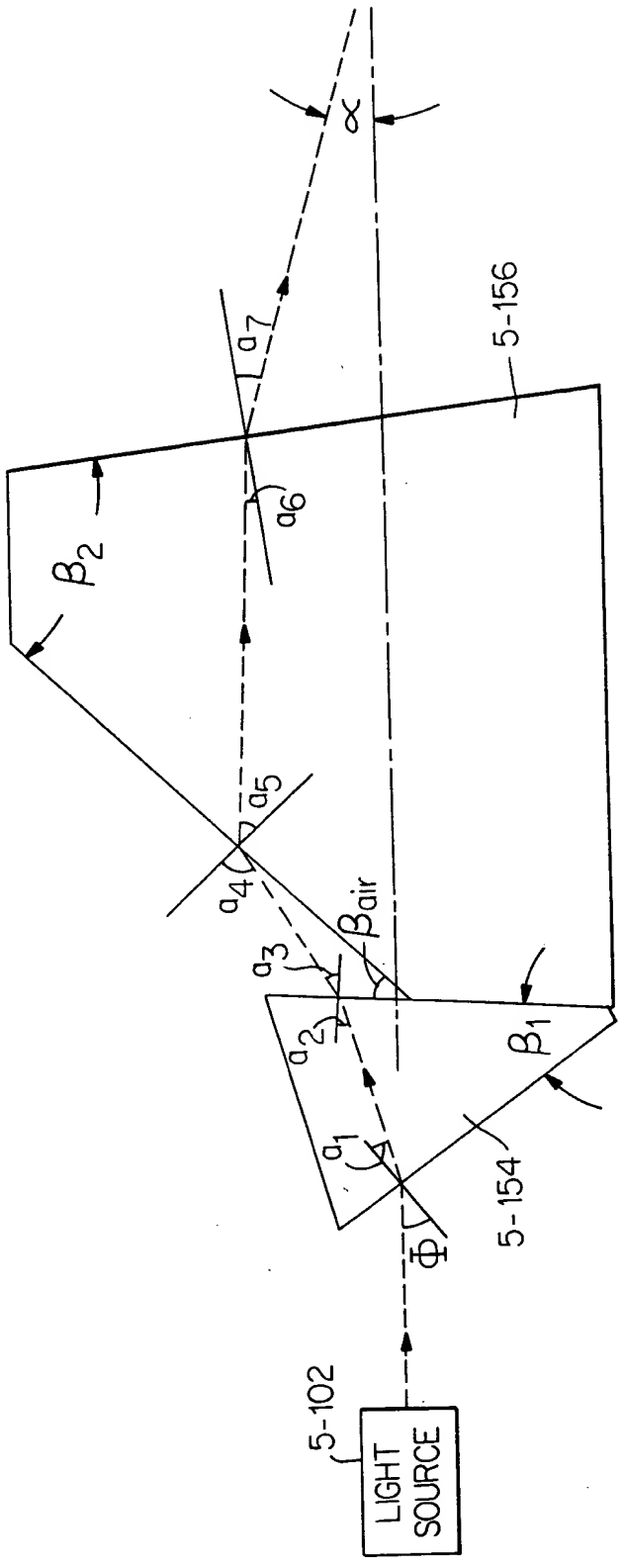

LIGHT SOURCE
5-102
5-154
5-156
5-152
α
Φ
a_1
a_2
a_3
a_4
a_5
a_6
a_7
β_{air}
β_1
β_2

FIG.68

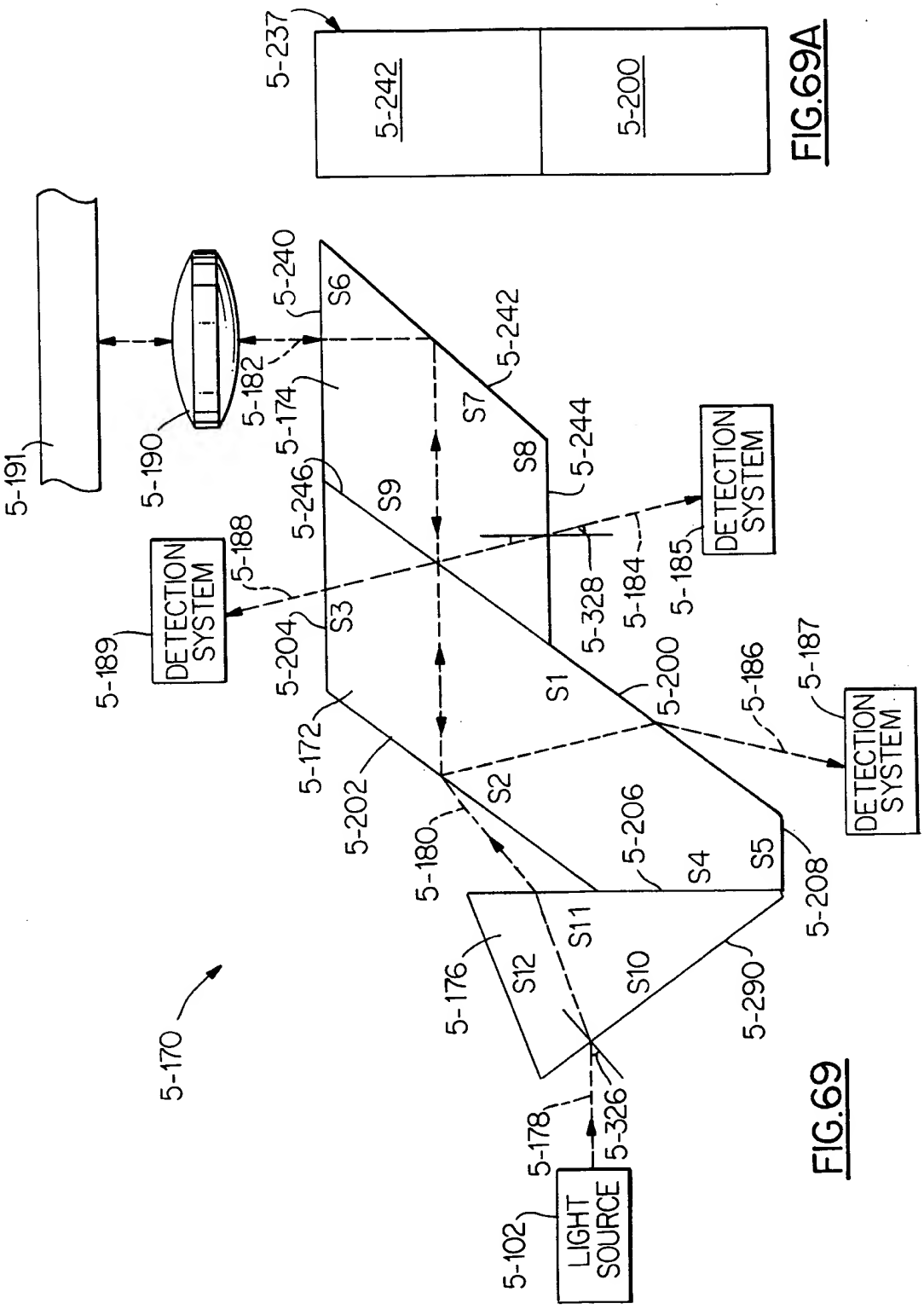
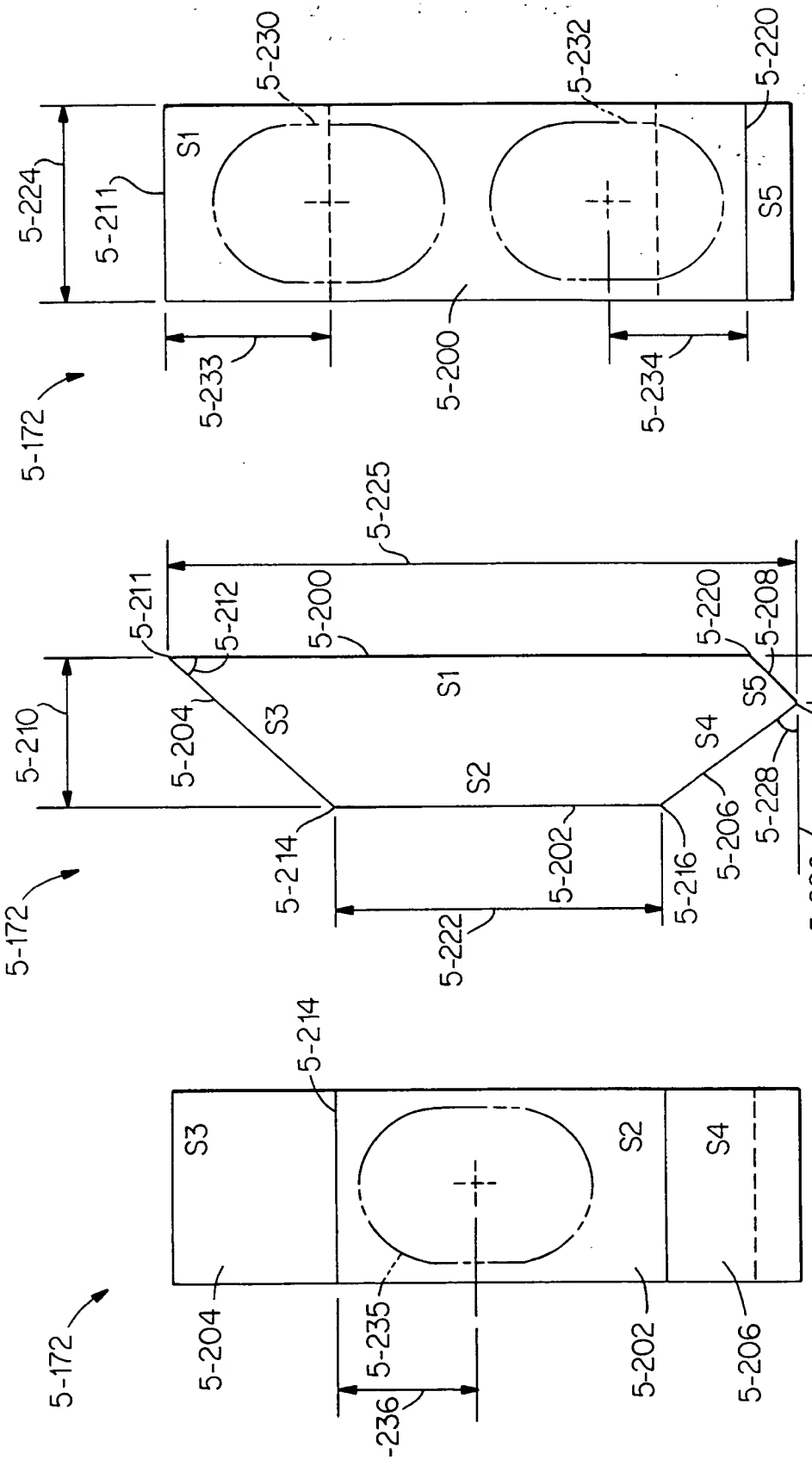


FIG.69A

FIG.69


5-172
5-224
5-211
S1
5-230
5-232
5-220
S5
5-233
5-200
5-234
FIG. 70A
5-172
5-210
5-225
5-211
5-212
5-200
5-220
5-208
5-227
5-204
S3
S1
S5
S4
S2
5-214
5-202
5-216
5-206
5-228
5-218
5-222
5-226
FIG. 70
5-172
5-214
S3
S2
S4
5-204
5-235
5-202
5-206
5-236
FIG. 70B

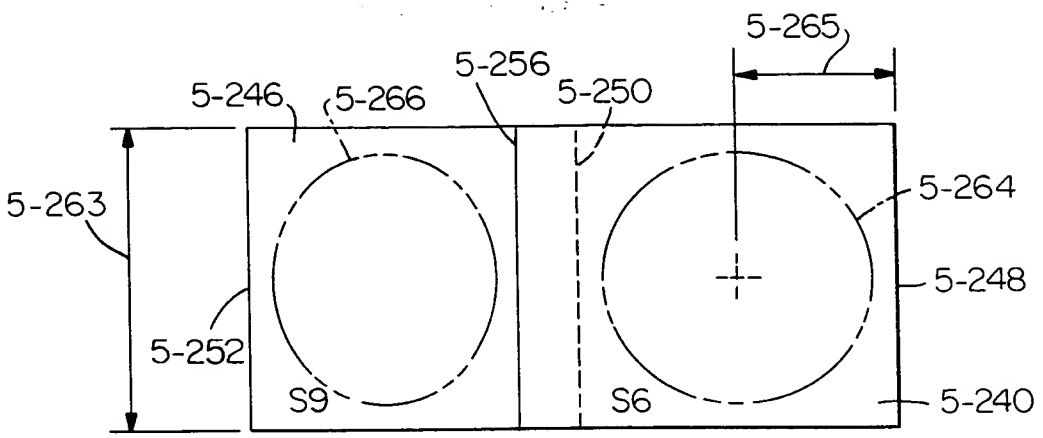


FIG.71A

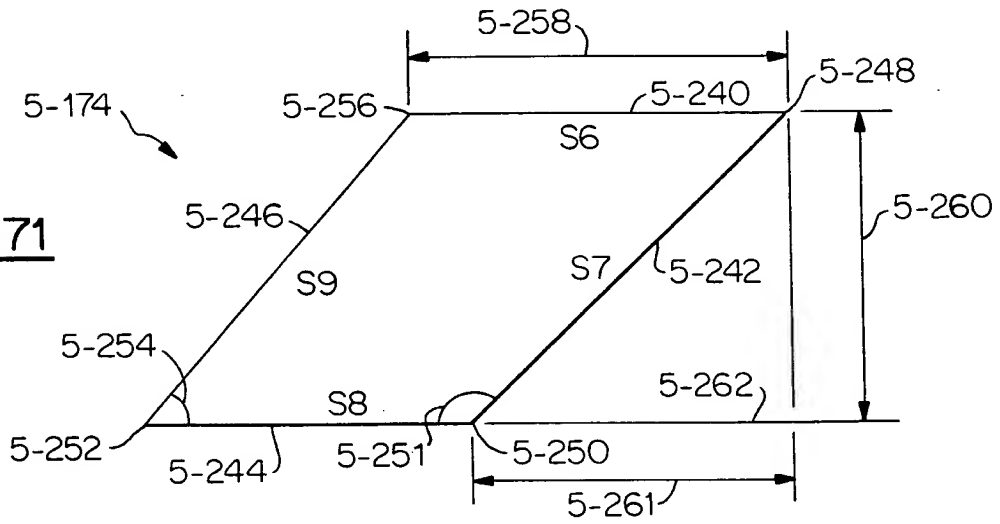


FIG.71

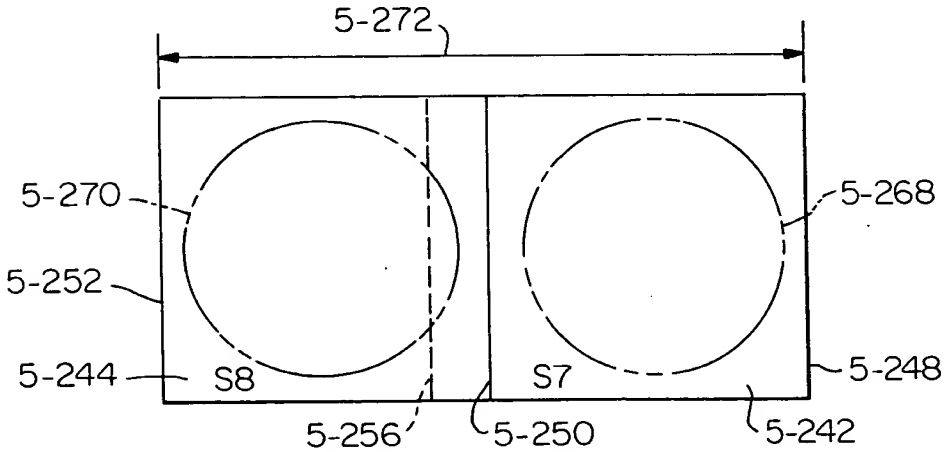


FIG.71B

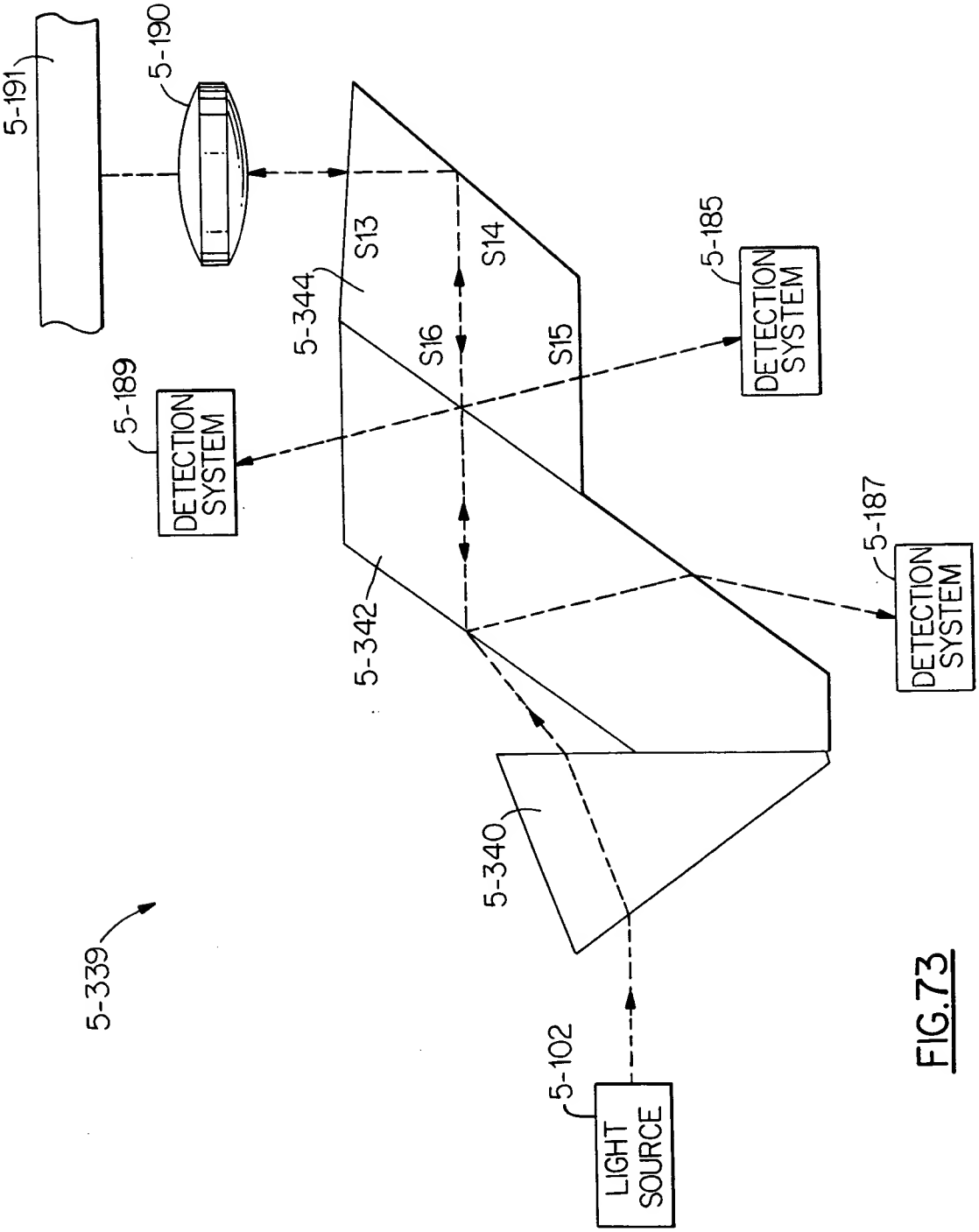

5-191
5-190
5-344
S13
S14
S16
S15
5-185
DETECTION SYSTEM
5-189
DETECTION SYSTEM
5-187
DETECTION SYSTEM
5-342
5-340
5-339
5-102
LIGHT SOURCE

FIG.73

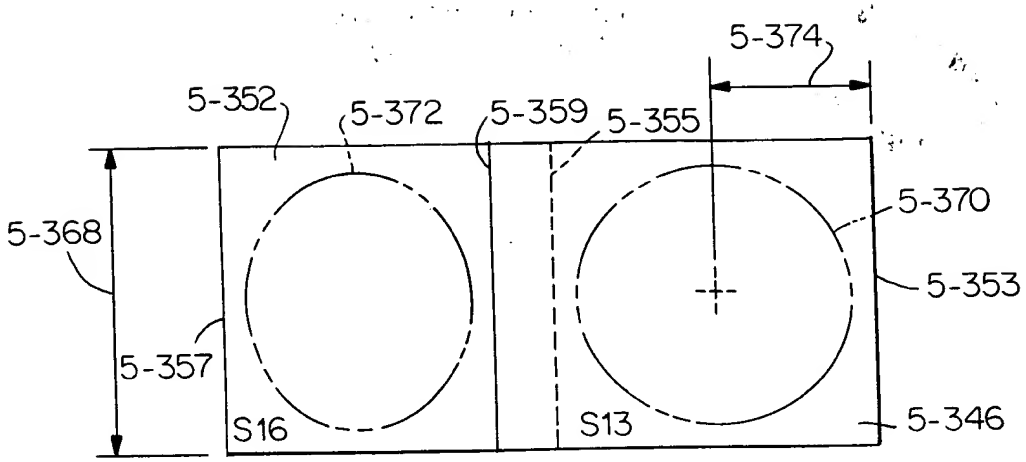


FIG.74A

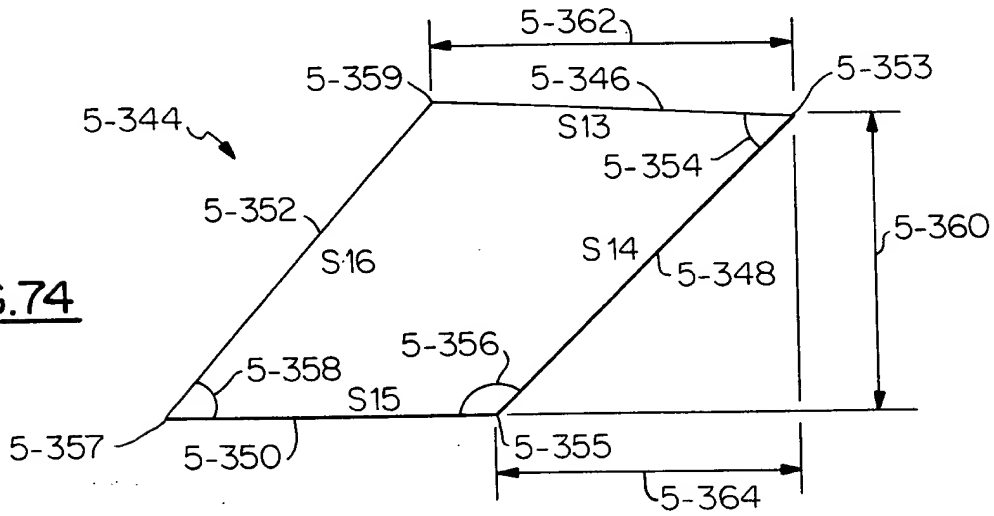


FIG.74

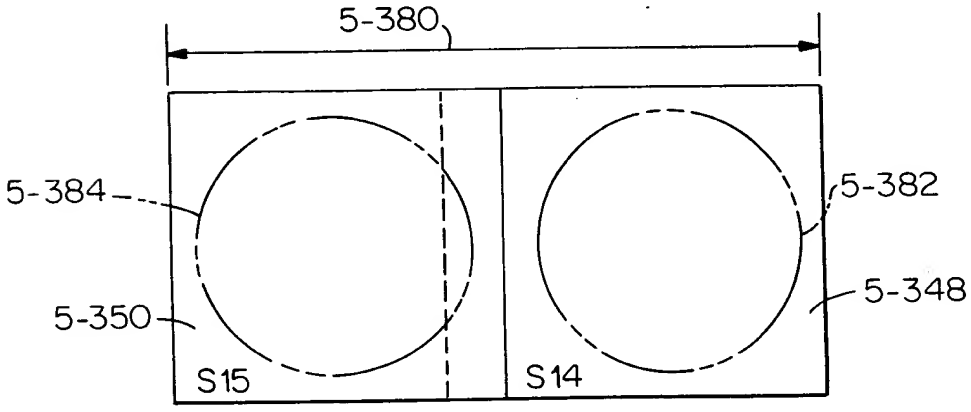


FIG.74B

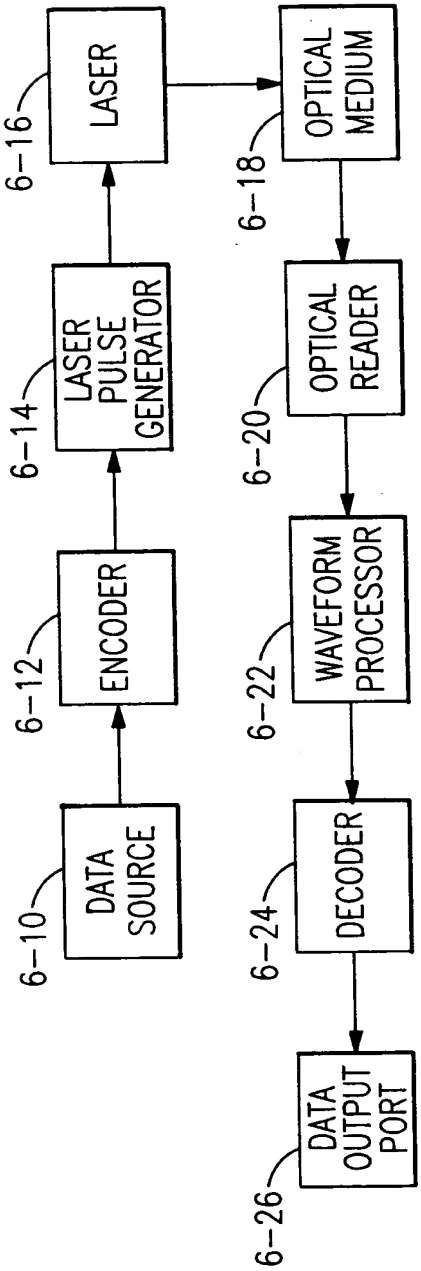

6-10
DATA SOURCE
6-12
ENCODER
6-14
LASER PULSE GENERATOR
6-16
LASER
6-18
OPTICAL MEDIUM
6-20
OPTICAL READER
6-22
WAVEFORM PROCESSOR
6-24
DECODER
6-26
DATA OUTPUT PORT

FIG.75

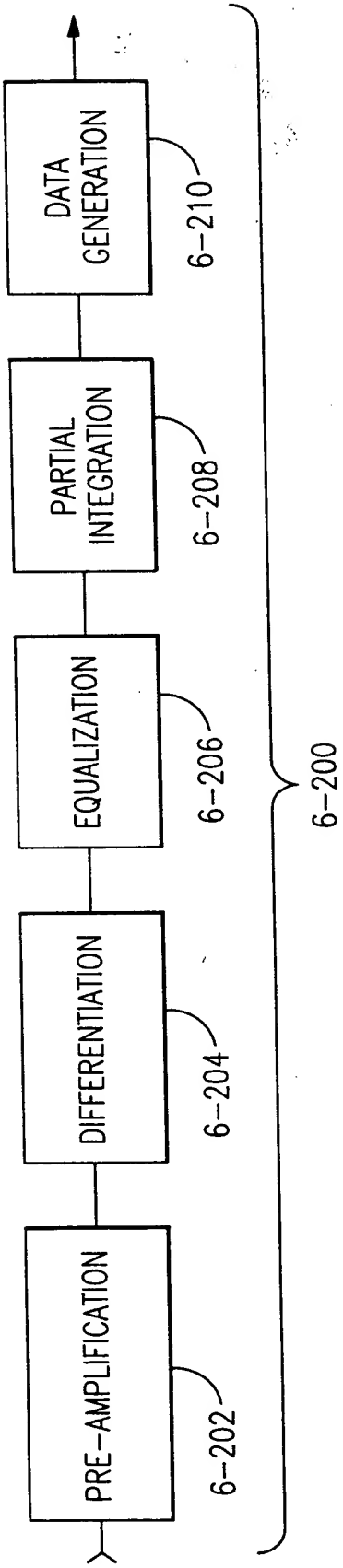

PRE-AMPLIFICATION
6-202
DIFFERENTIATION
6-204
EQUALIZATION
6-206
PARTIAL INTEGRATION
6-208
DATA GENERATION
6-210
6-200

FIG.78

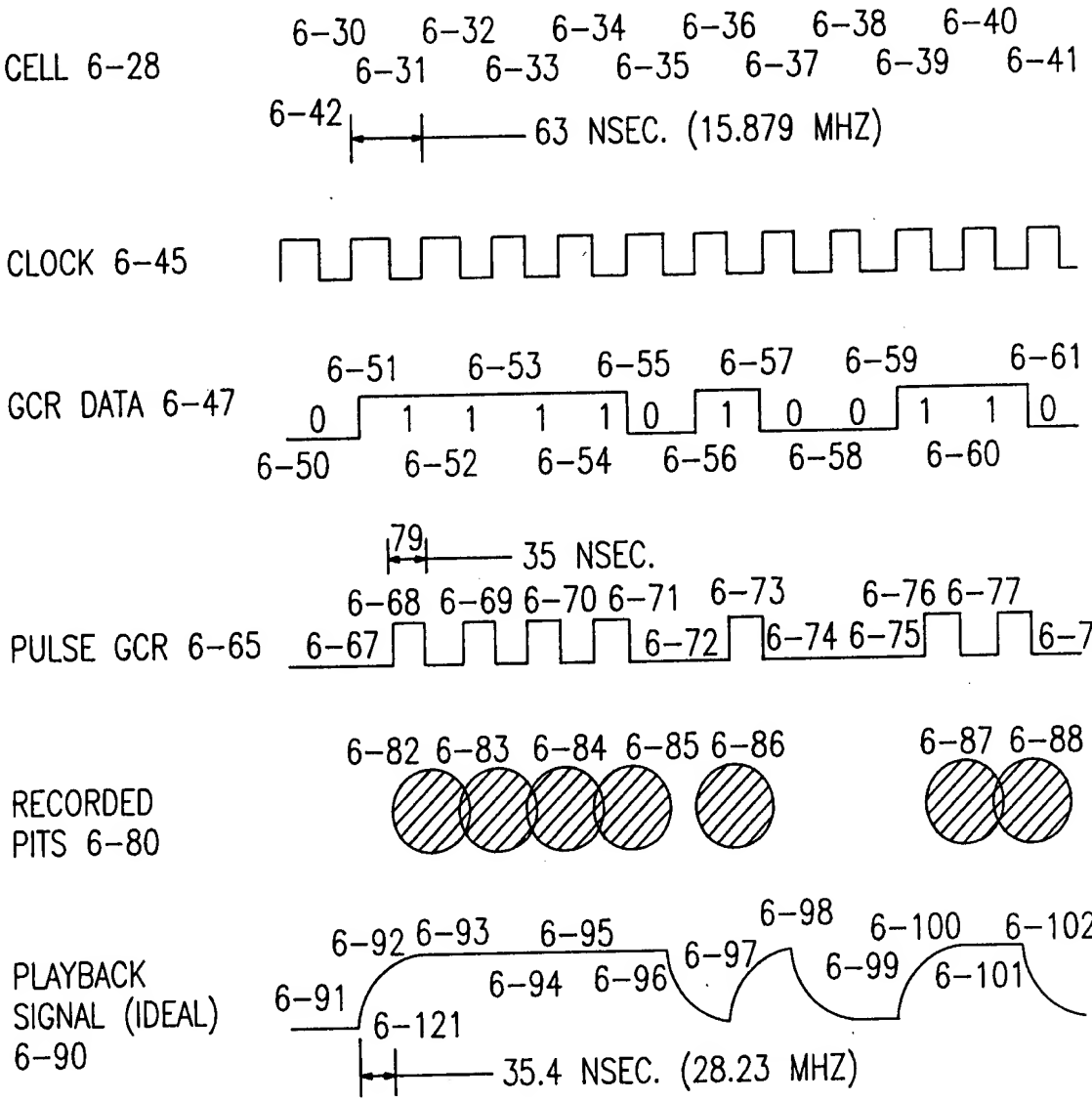


FIG.76A

FIG.76A
FIG.76B

FIG.76

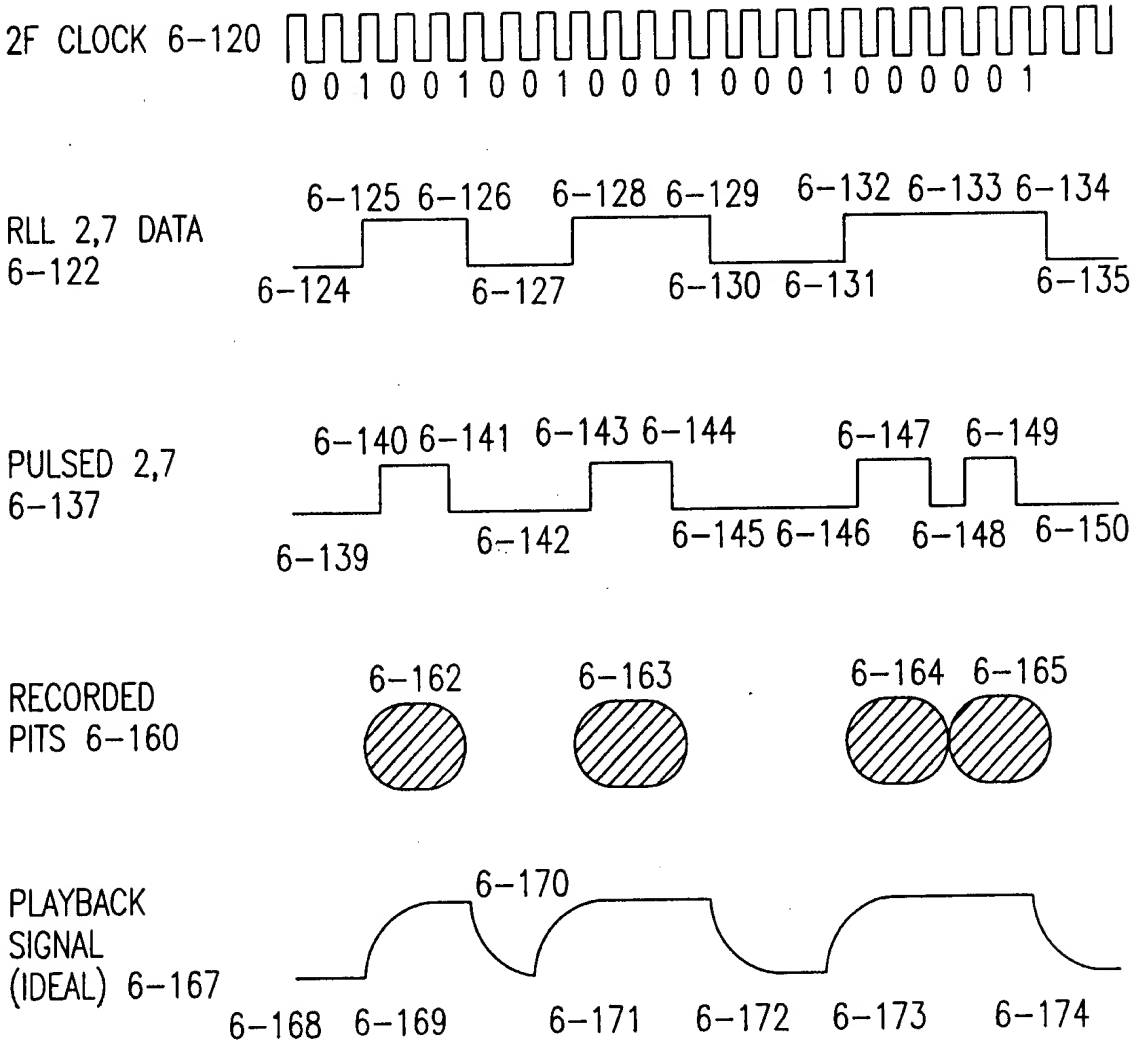

2F CLOCK 6-120
0 0 1 0 0 1 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 0 1
RLL 2,7 DATA 6-122
6-125 6-126 6-128 6-129 6-132 6-133 6-134
6-124 6-127 6-130 6-131 6-135
PULSED 2,7 6-137
6-140 6-141 6-143 6-144 6-147 6-149
6-139 6-142 6-145 6-146 6-148 6-150
RECORDED PITS 6-160
6-162 6-163 6-164 6-165
PLAYBACK SIGNAL (IDEAL) 6-167
6-170
6-168 6-169 6-171 6-172 6-173 6-174

FIG.76B

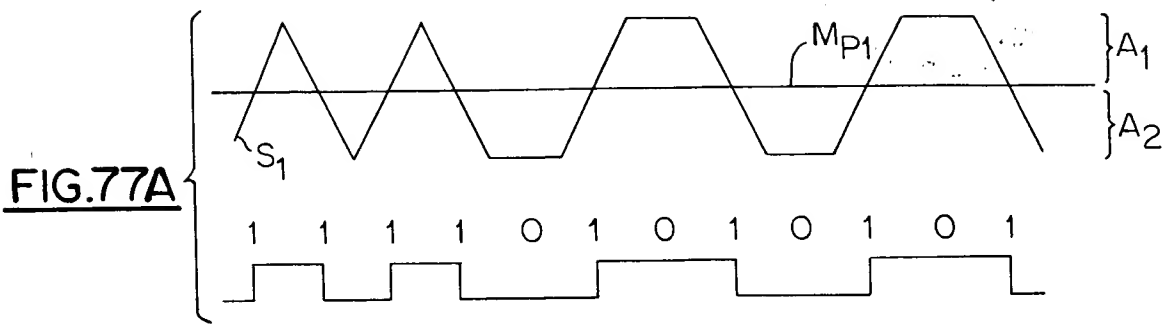


FIG.77A

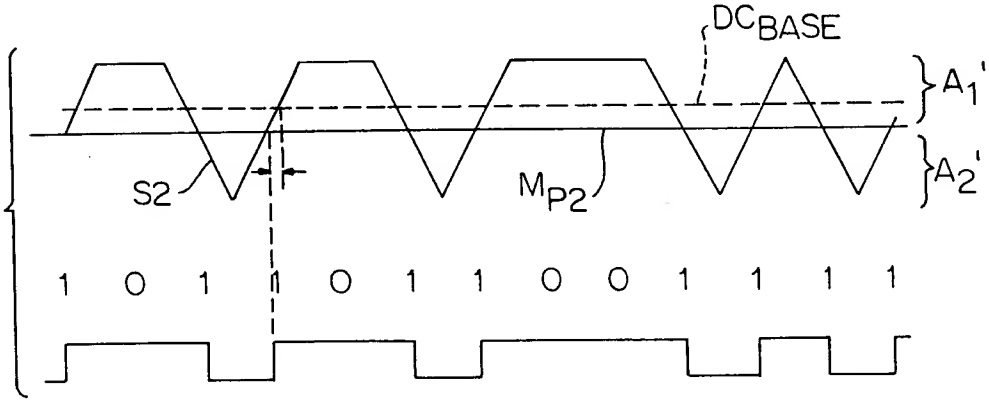


FIG.77B

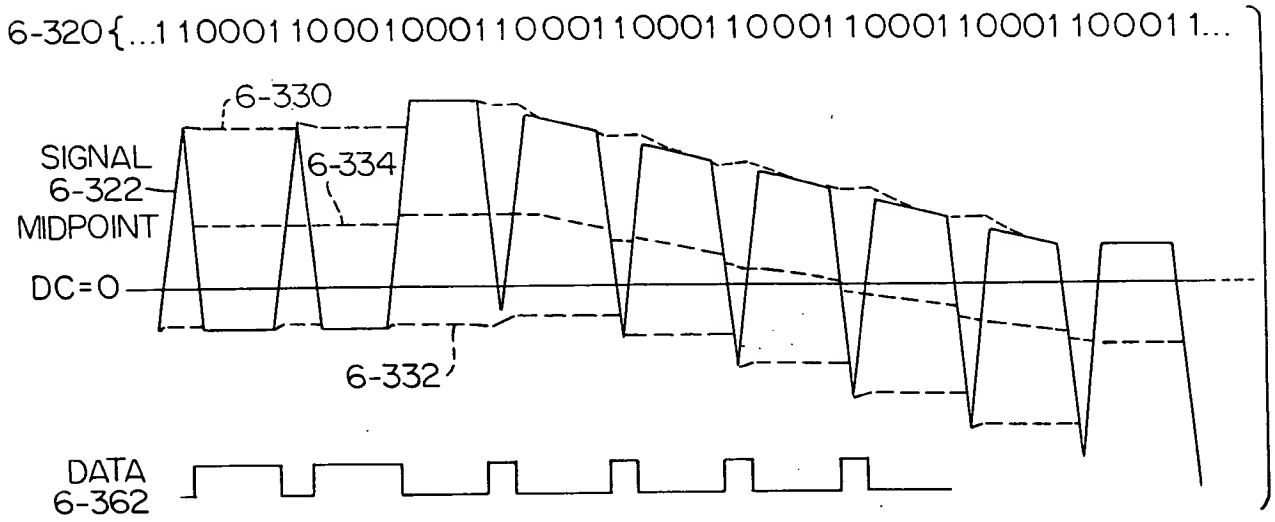


FIG.83

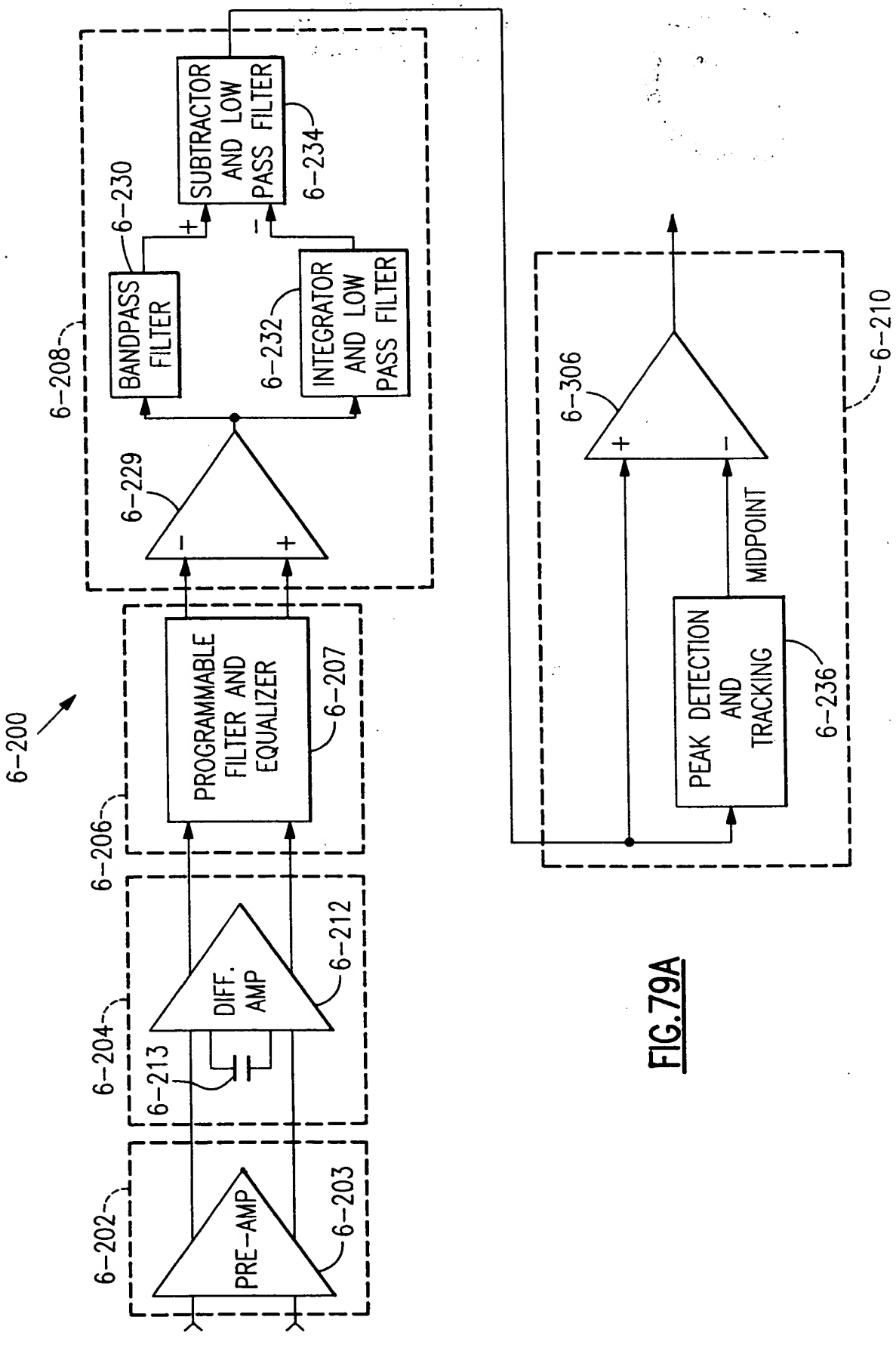

6-200
6-202
PRE-AMP
6-203
6-204
6-213
DIFF. AMP
6-212
6-206
PROGRAMMABLE FILTER AND EQUALIZER
6-207
6-208
BANDPASS FILTER
6-230
SUBTRACTOR AND LOW PASS FILTER
6-234
INTEGRATOR AND LOW PASS FILTER
6-232
6-229
6-210
6-306
PEAK DETECTION AND TRACKING
6-236
MIDPOINT

FIG.79A

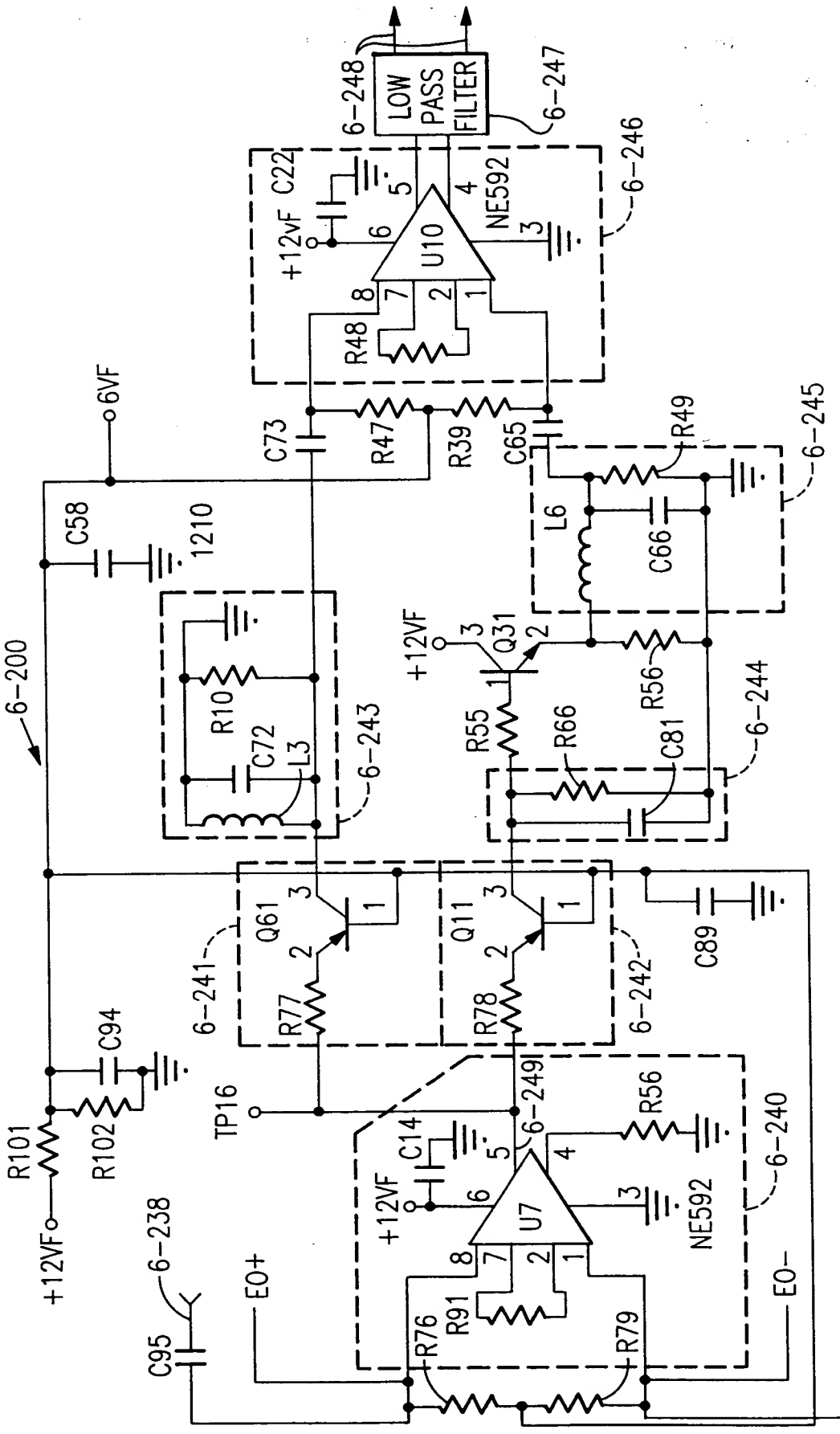

6-248
LOW PASS FILTER
6-247
6-246
C22
+12vF
U10
NE592
R48
6VF
C73
R47
R39
C65
R49
6-245
C58
1210
L6
C66
6-200
+12VF
Q31
R56
R10
C72
L3
6-243
R55
R66
C81
6-244
Q61
Q11
C89
6-241
6-242
R77
R78
C94
TP16
6-249
R56
R101
R102
C14
6-240
+12VF
U7
NE592
6-238
EO+
EO-
C95
R76
R91
R79
C96
6-239

FIG.79B

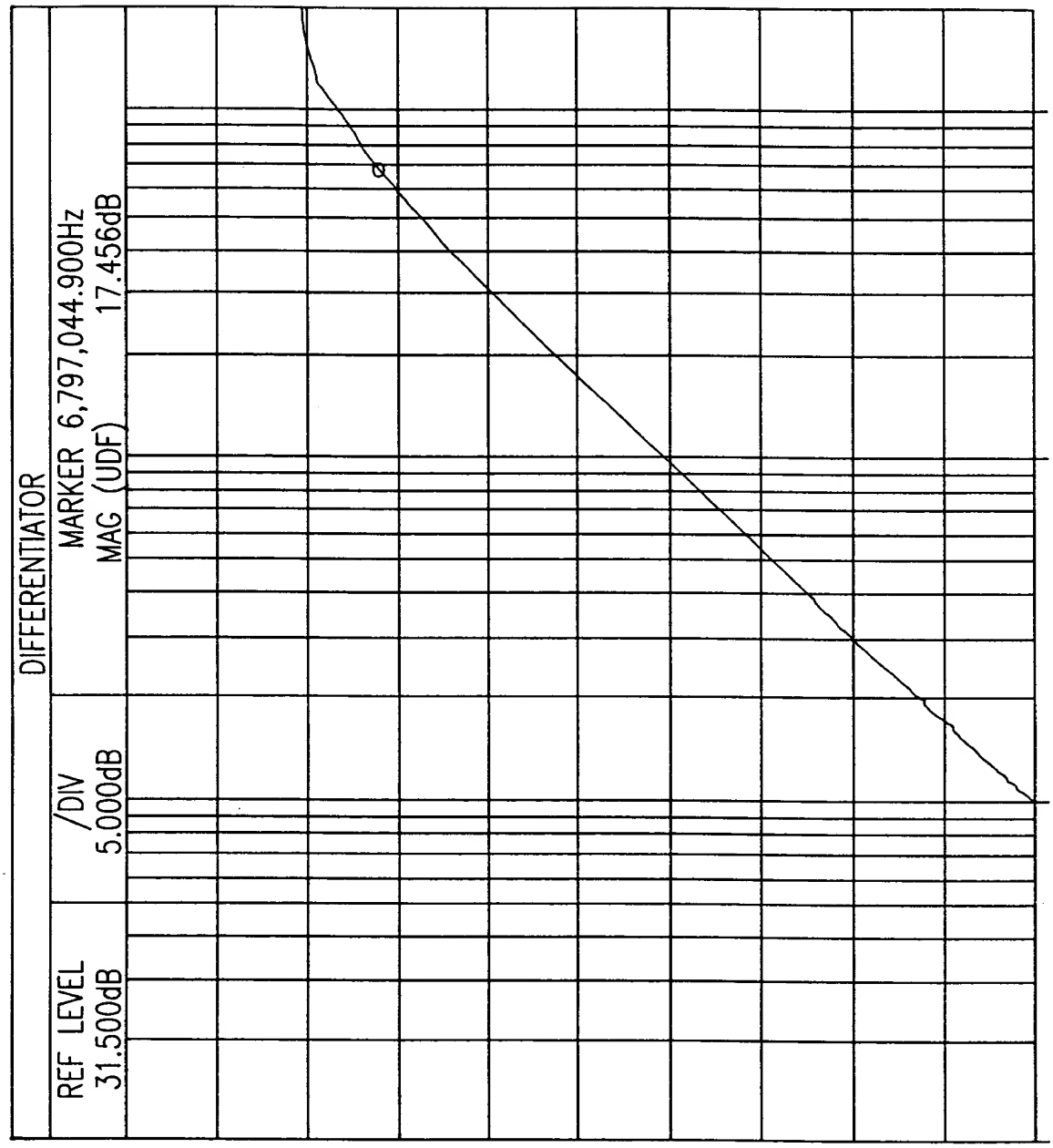

DIFFERENTIATOR
REF LEVEL
31.500dB
/DIV
5.000dB
MARKER 6,797,044.900Hz
MAG (UDF)
17.456dB
10K
100K
1M
10M
START 10,000.000Hz
STOP 20,000,000.000Hz

FIG.80A

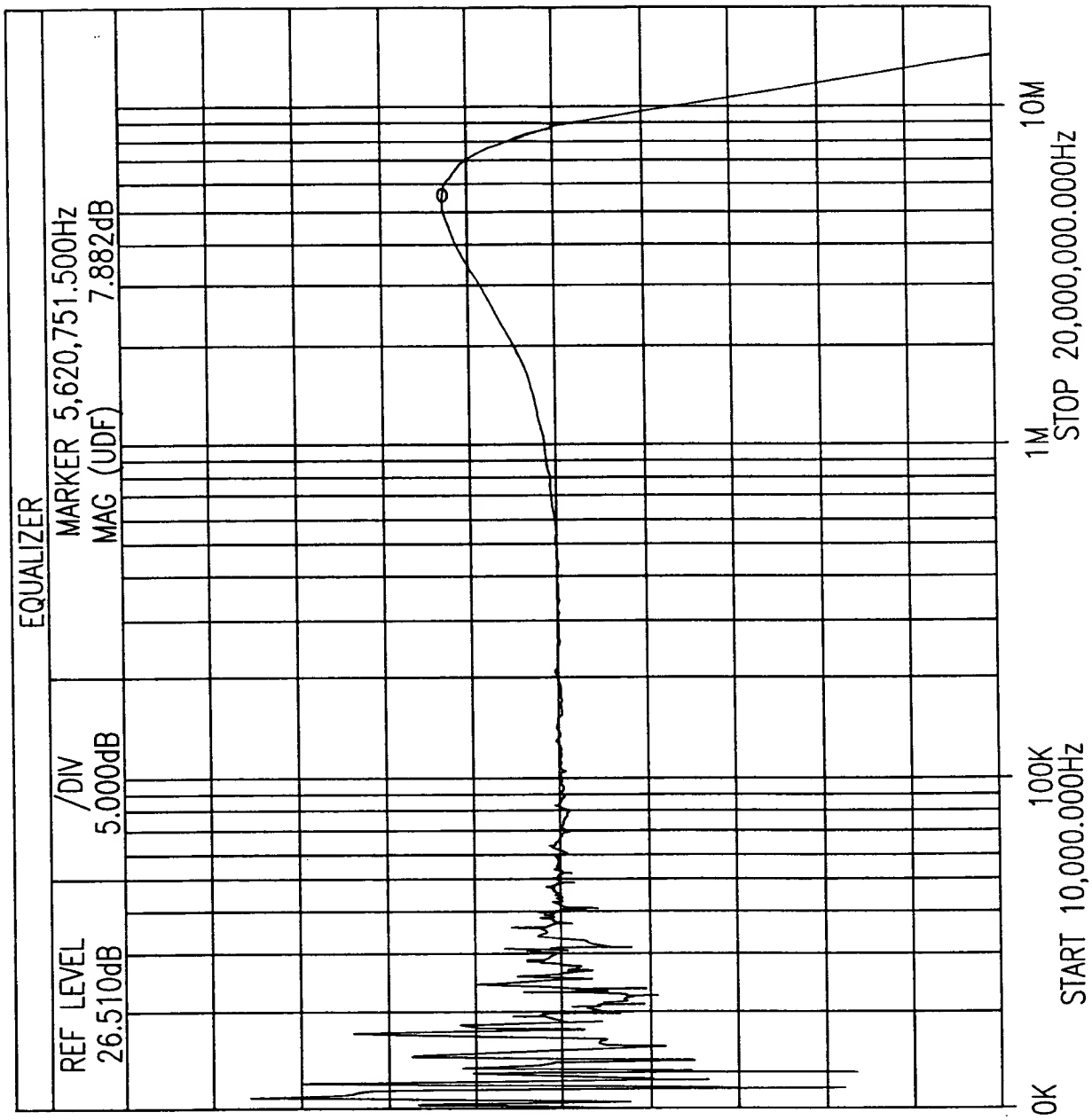

EQUALIZER
REF LEVEL
26.510dB
/DIV
5.000dB
MARKER 5,620,751.500Hz
MAG (UDF)
7.882dB
10K
100K
1M
10M
START 10,000.000Hz
STOP 20,000,000.000Hz

FIG.80B

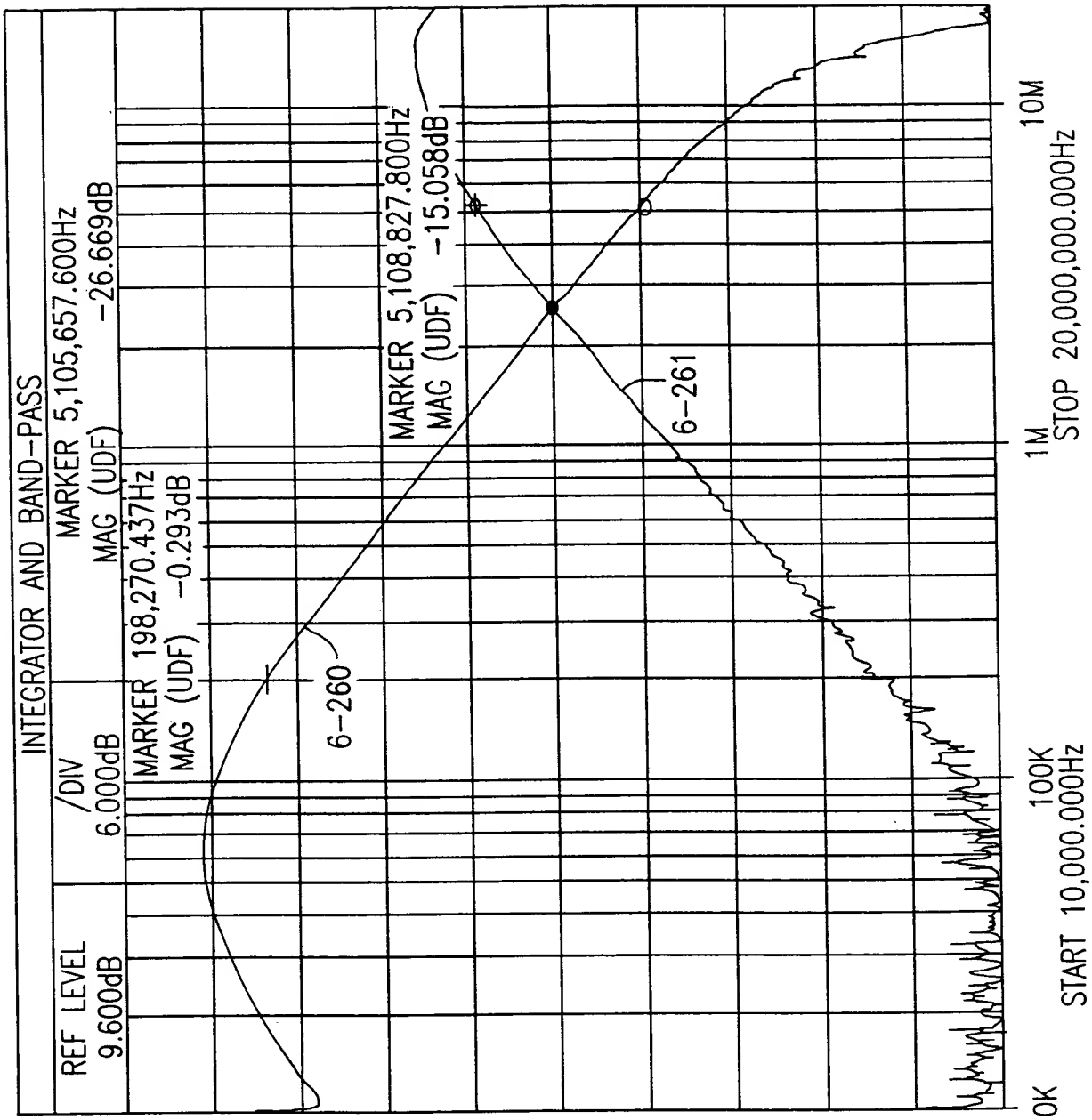

INTEGRATOR AND BAND-PASS
REF LEVEL
9.600dB
/DIV
6.000dB
MARKER 198,270.437Hz
MAG (UDF) -0.293dB
MARKER 5,105,657.600Hz
MAG (UDF) -26.669dB
MARKER 5,108,827.800Hz
MAG (UDF) -15.058dB
6-260
6-261
10K
START 10,000.000Hz
100K
1M
STOP 20,000,000.000Hz
10M

FIG.80C

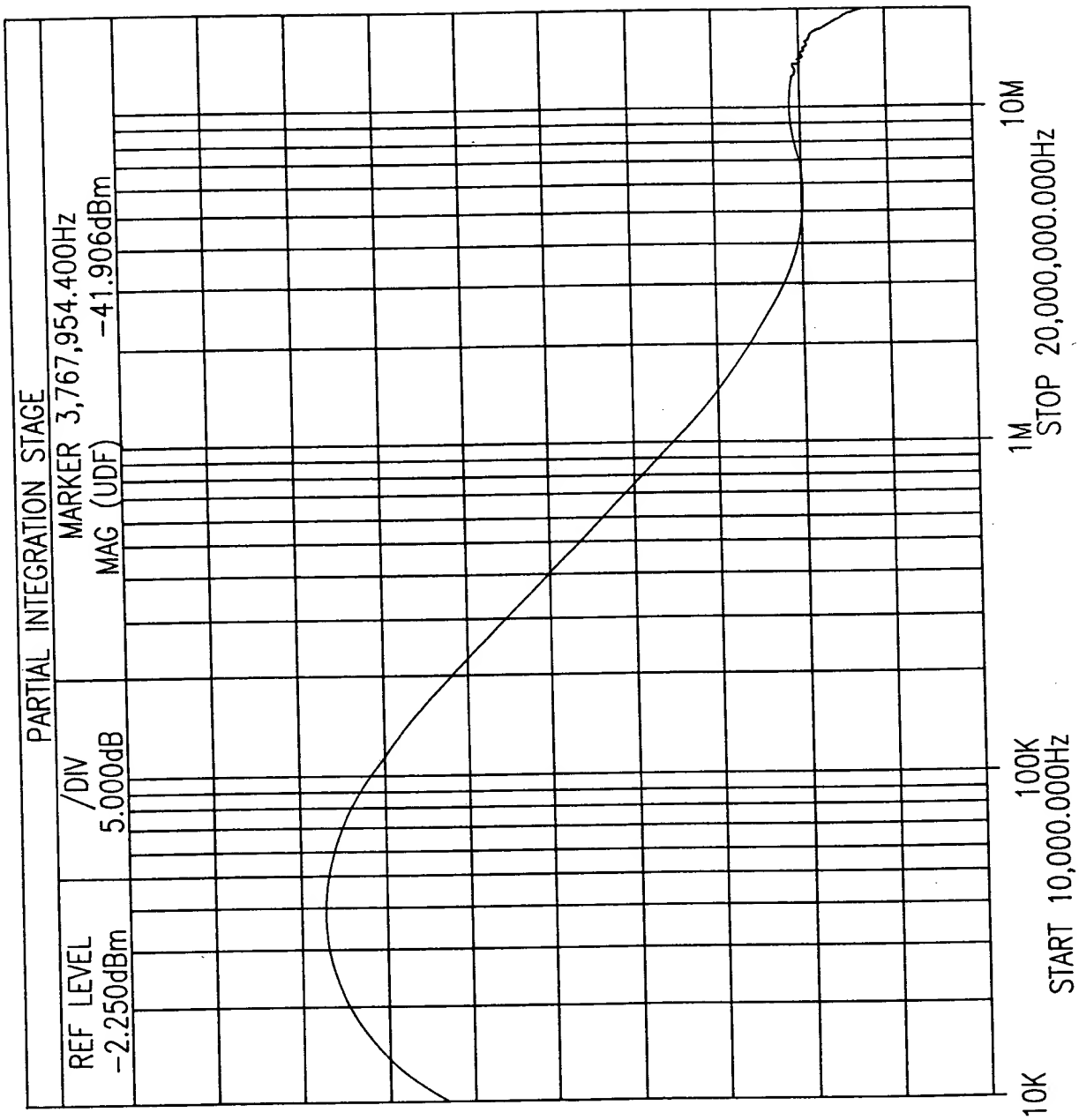

PARTIAL INTEGRATION STAGE
REF LEVEL
-2.250dBm
/DIV
5.000dB
MARKER 3,767,954.400Hz
MAG (UDF)
-41.906dBm
10K
100K
1M
10M
START 10,000.000Hz
STOP 20,000,000.000Hz

FIG.80D

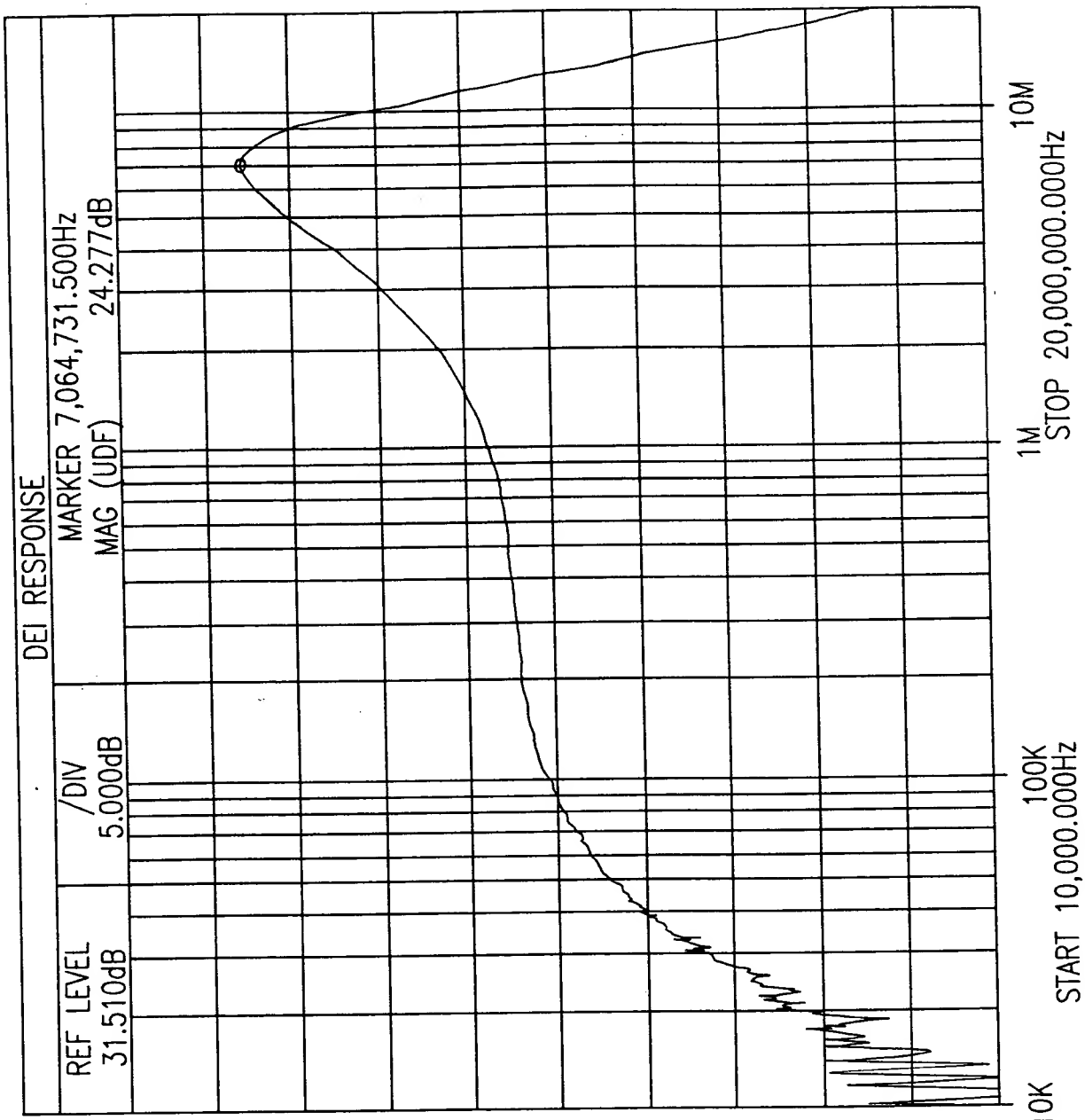

DEI RESPONSE
REF LEVEL
31.510dB
/DIV
5.000dB
MARKER 7,064,731.500Hz
MAG (UDF)
24.277dB
10K
100K
1M
10M
START 10,000.000Hz
STOP 20,000,000.000Hz

FIG.80E

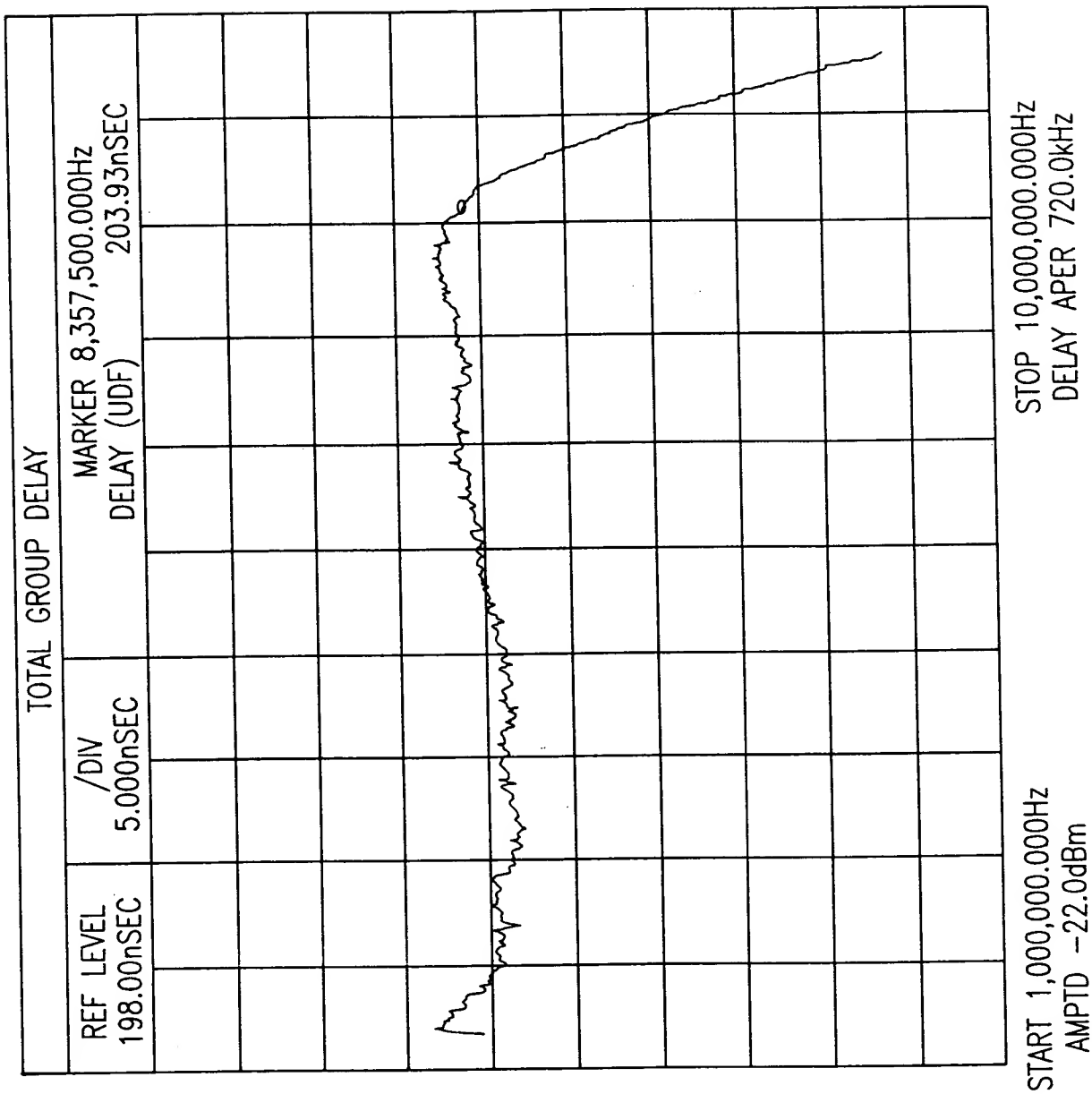

TOTAL GROUP DELAY
REF LEVEL
198.00nSEC
/DIV
5.000nSEC
MARKER 8,357,500.000Hz
DELAY (UDF)
203.93nSEC
START 1,000,000.000Hz
AMPTD -22.0dBm
STOP 10,000,000.000Hz
DELAY APER 720.0kHz

FIG.80F

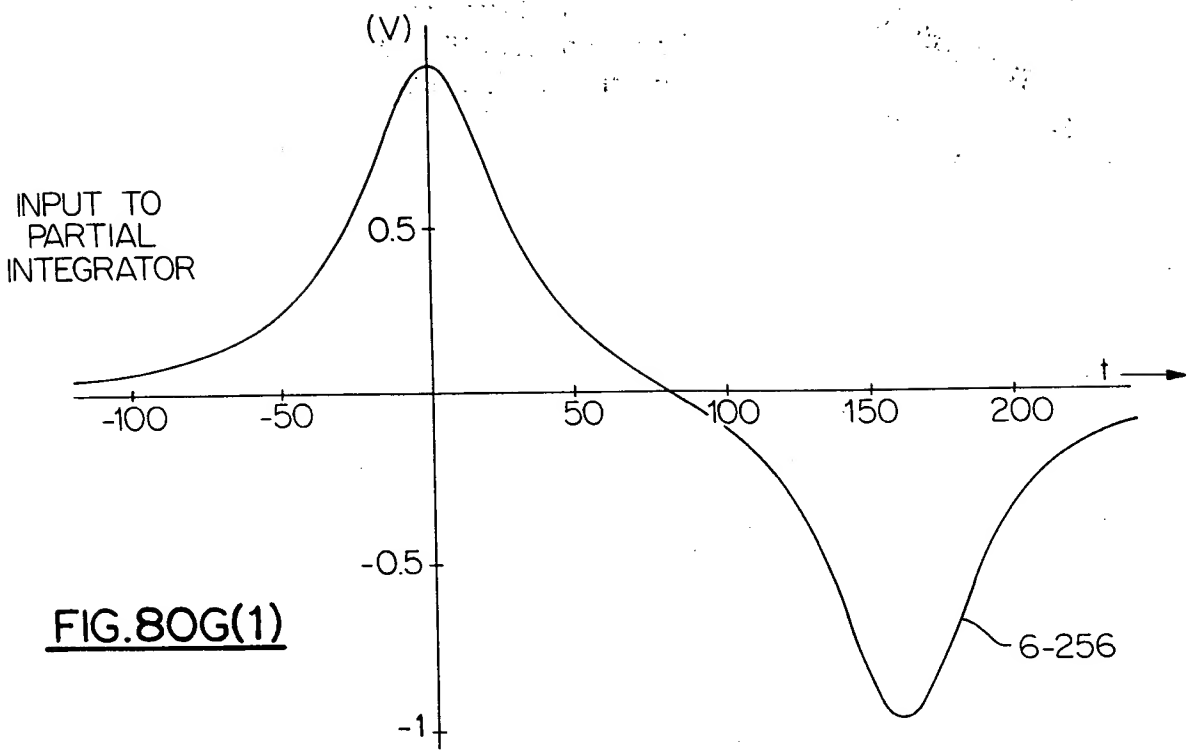


FIG.80G(1)

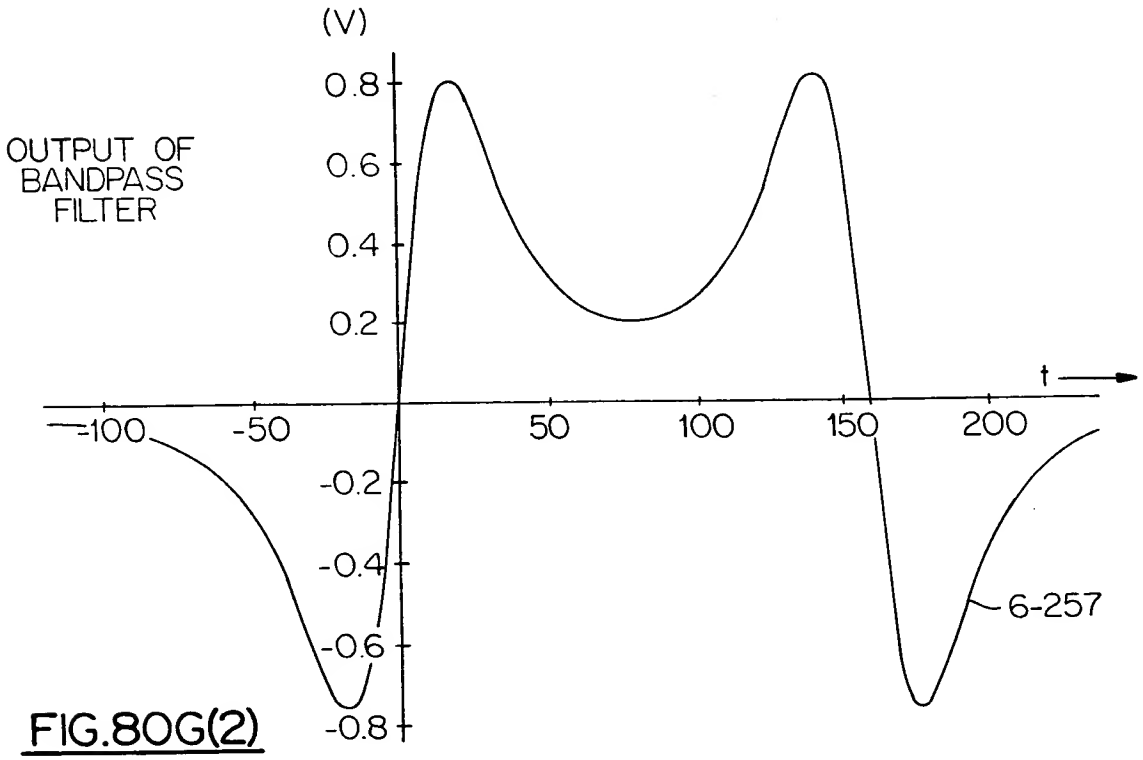


FIG.80G(2)

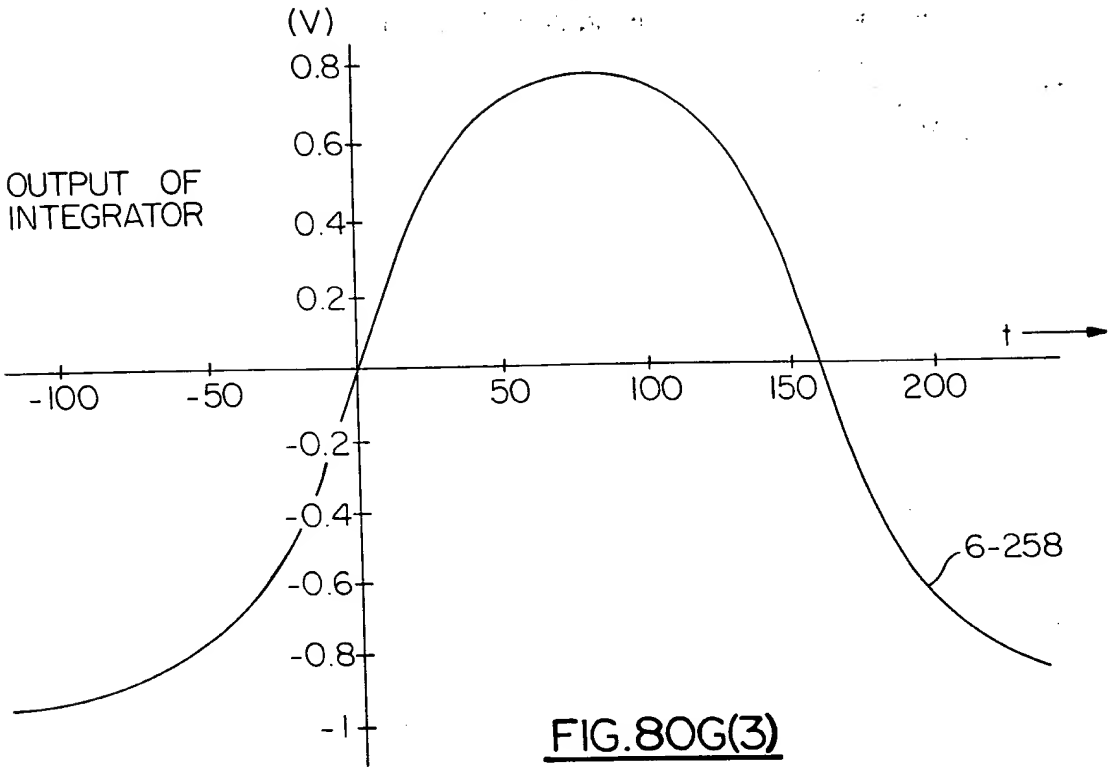


FIG.80G(3)

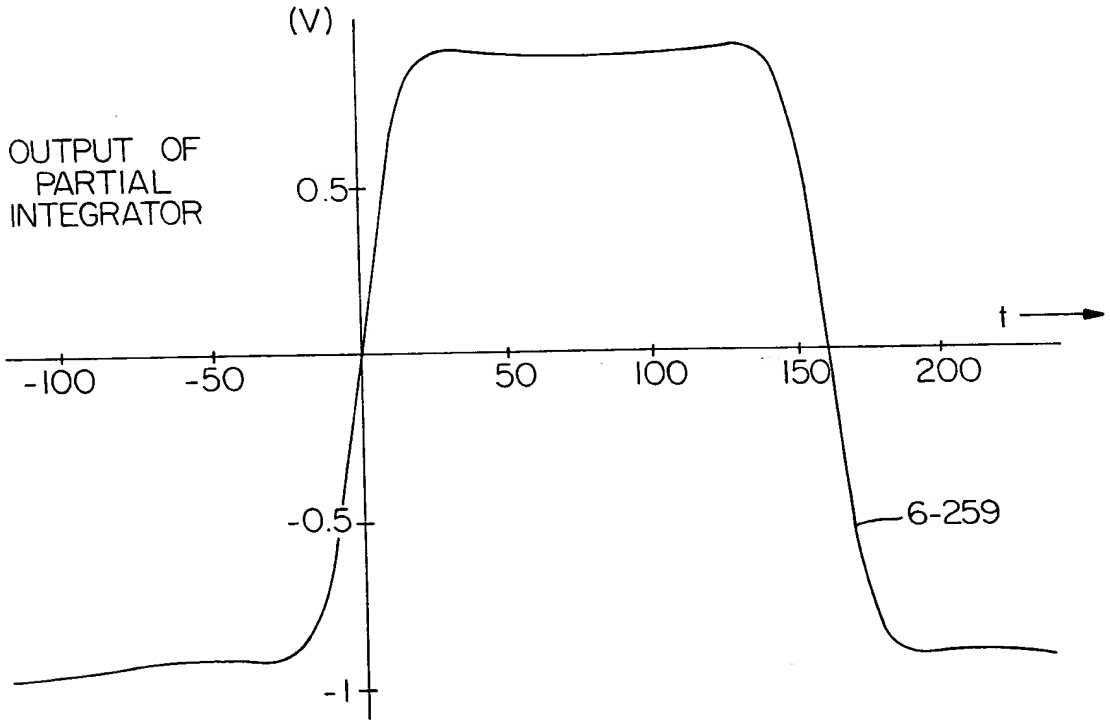


FIG.80G(4)

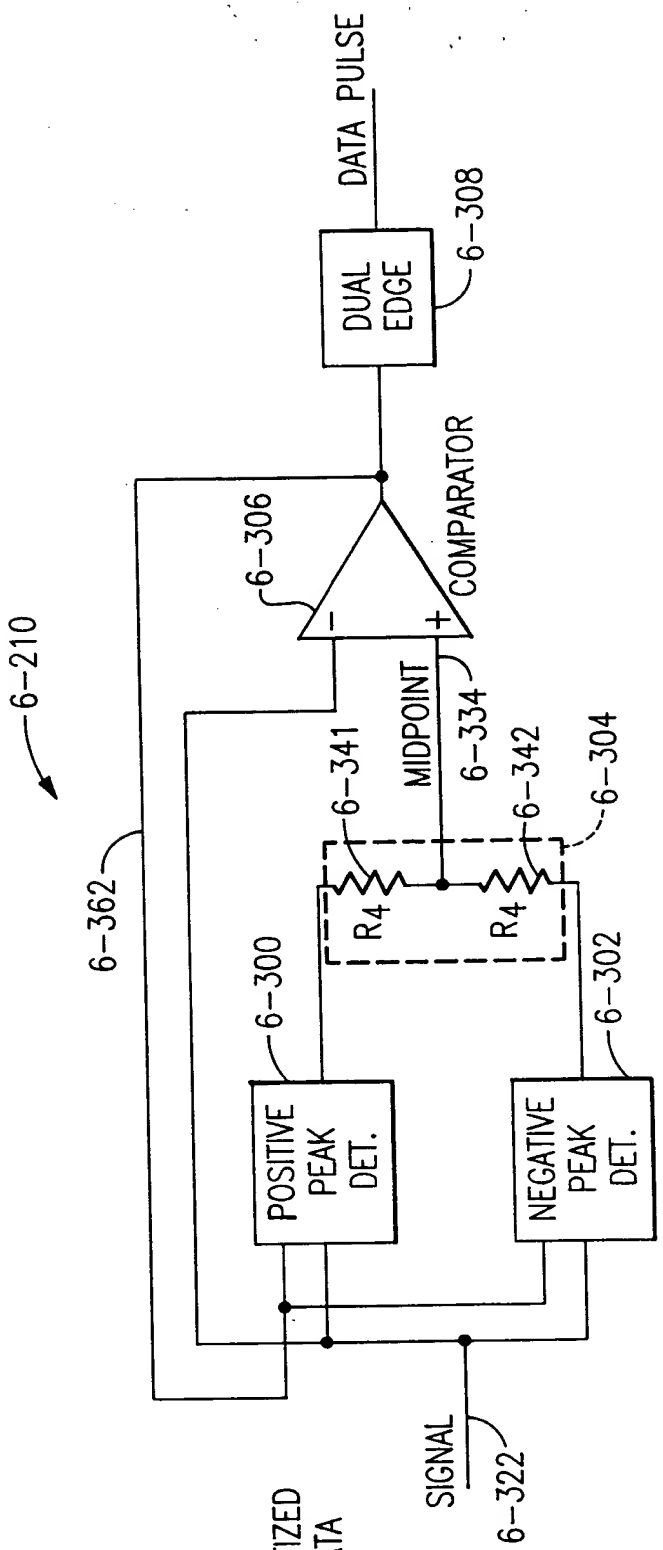

6-210
DATA PULSE
DUAL EDGE
6-308
COMPARATOR
6-306
MIDPOINT
6-334
6-341
6-342
6-304
R4
R4
6-362
6-300
6-302
POSITIVE PEAK DET.
NEGATIVE PEAK DET.
SIGNAL
6-322
DIGITIZED DATA

FIG.81

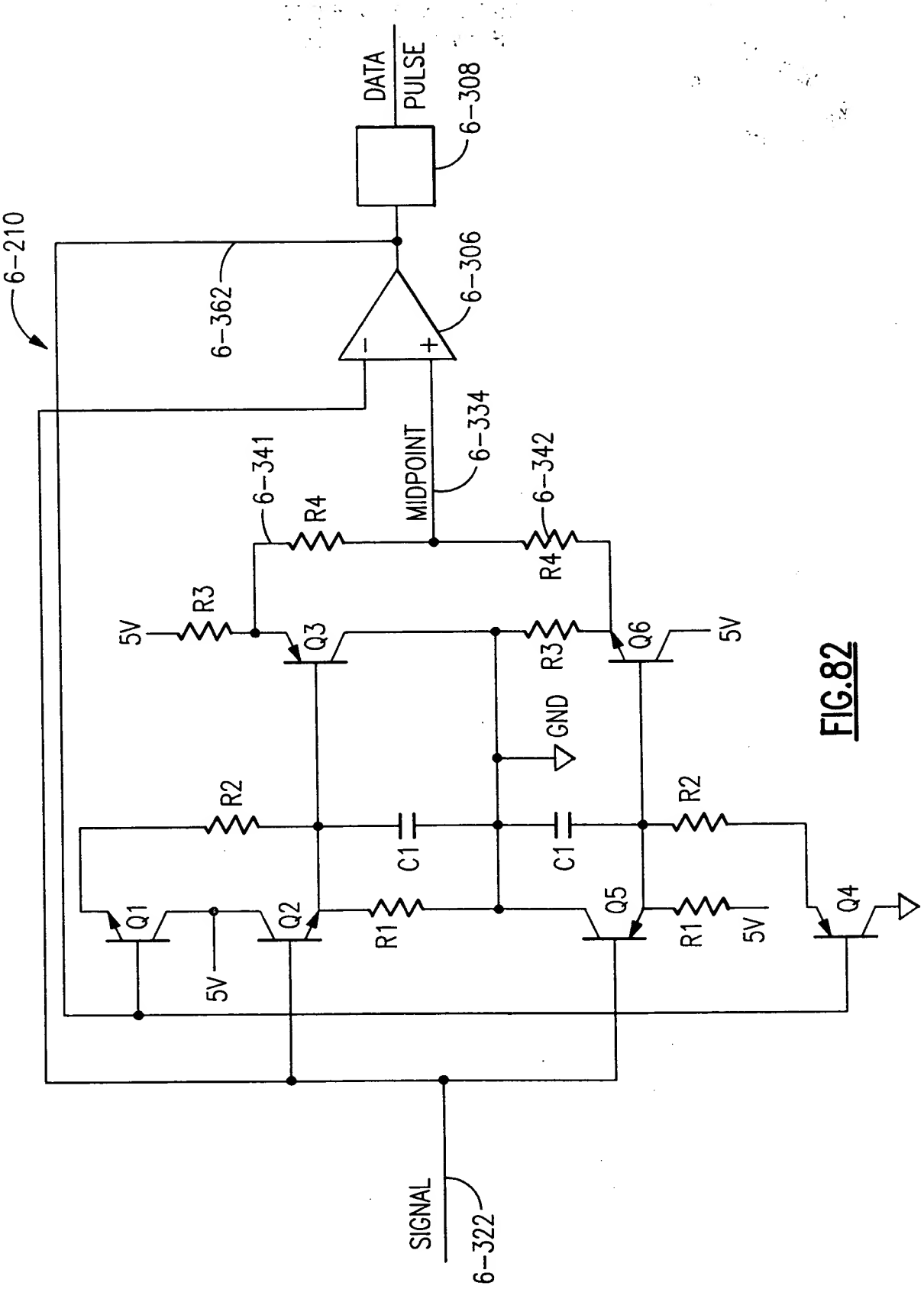

DATA
PULSE
6-308
6-210
6-362
6-306
6-334
MIDPOINT
6-341
6-342
R4
R4
R3
R3
5V
Q3
Q6
5V
GND
R2
R2
C1
C1
Q1
Q2
Q5
Q4
R1
R1
5V
5V
SIGNAL
6-322

FIG.82

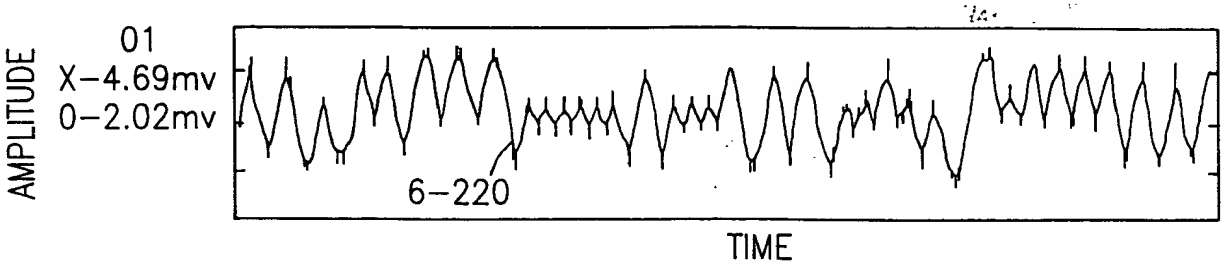


FIG.84A

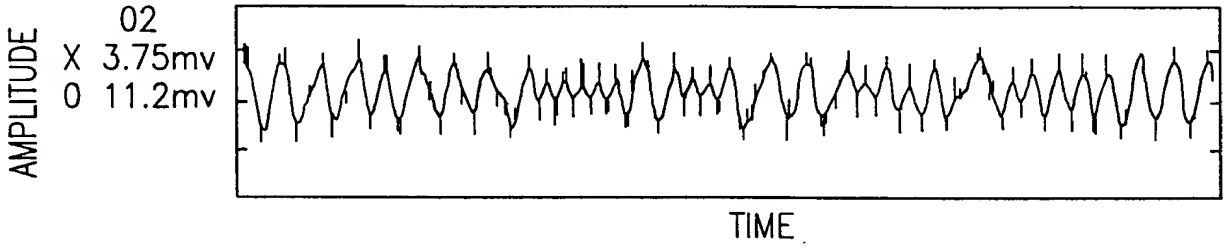


FIG.84B

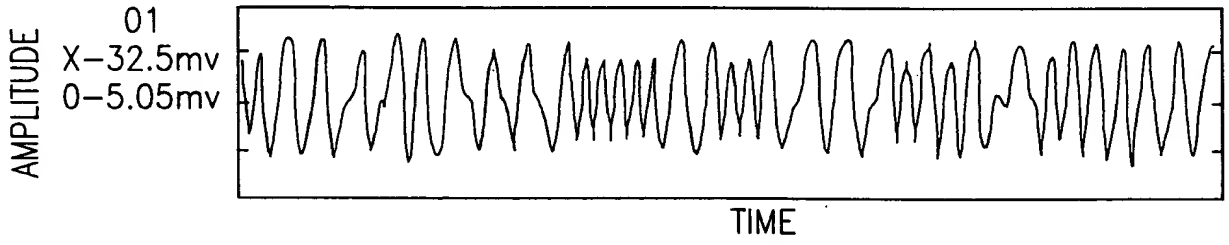


FIG.84C

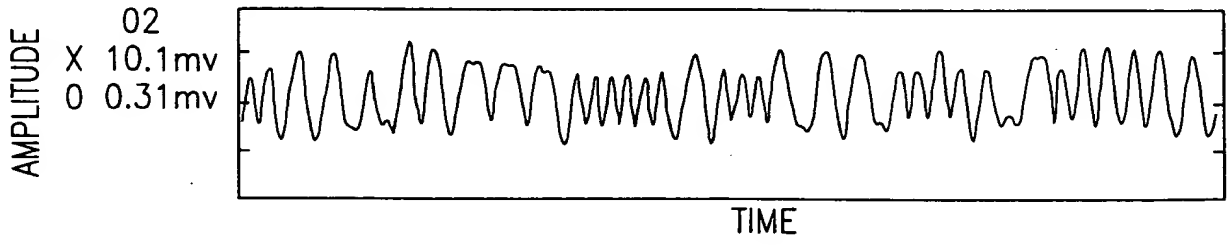


FIG.84D

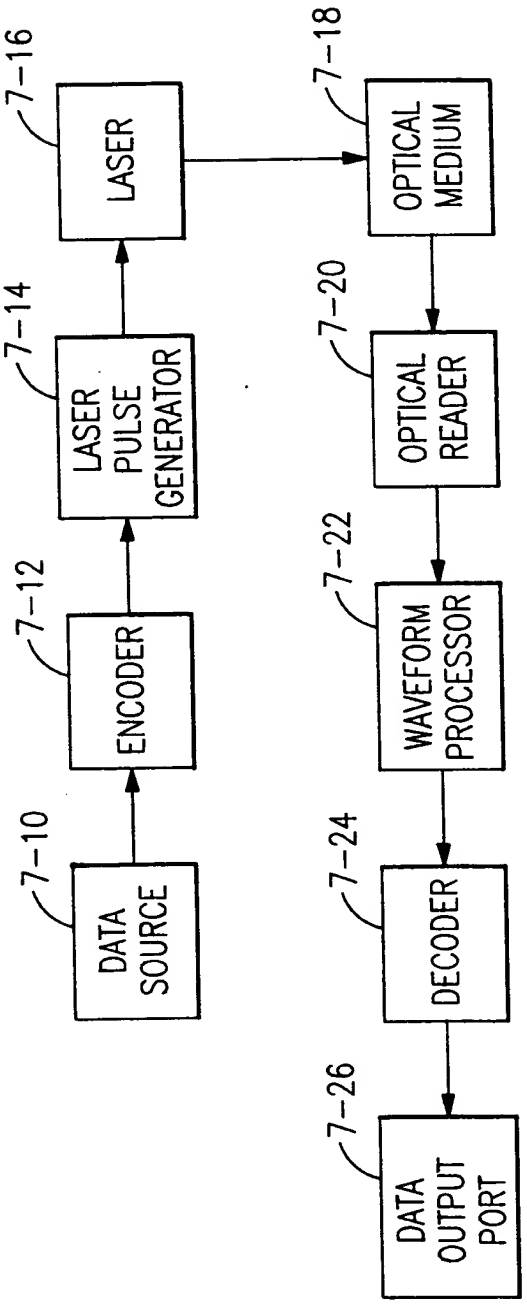

7-10
DATA SOURCE
7-12
ENCODER
7-14
LASER PULSE GENERATOR
7-16
LASER
7-18
OPTICAL MEDIUM
7-20
OPTICAL READER
7-22
WAVEFORM PROCESSOR
7-24
DECODER
7-26
DATA OUTPUT PORT

FIG.85

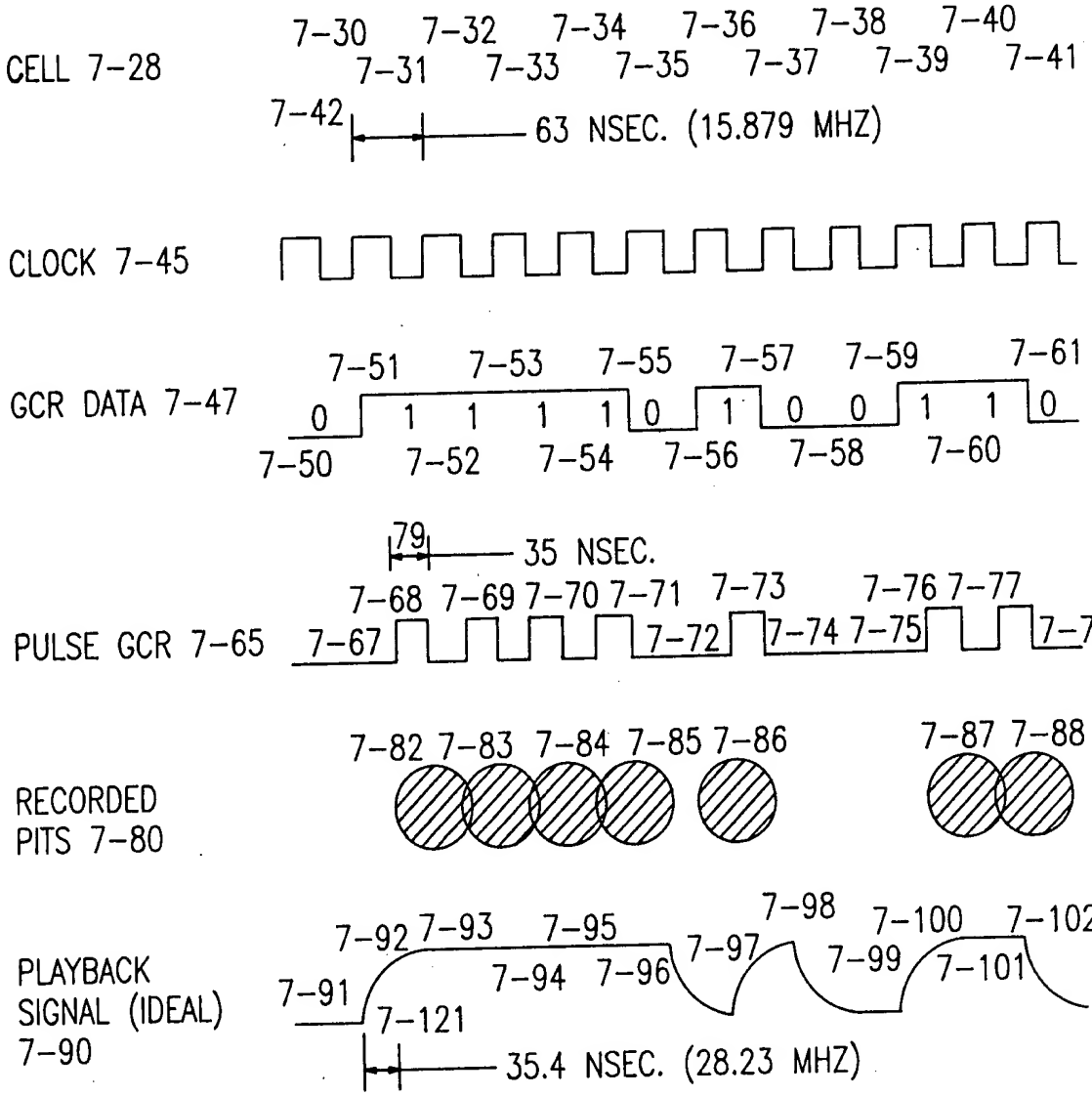


FIG.86A

FIG.86A
FIG.86B

FIG.86

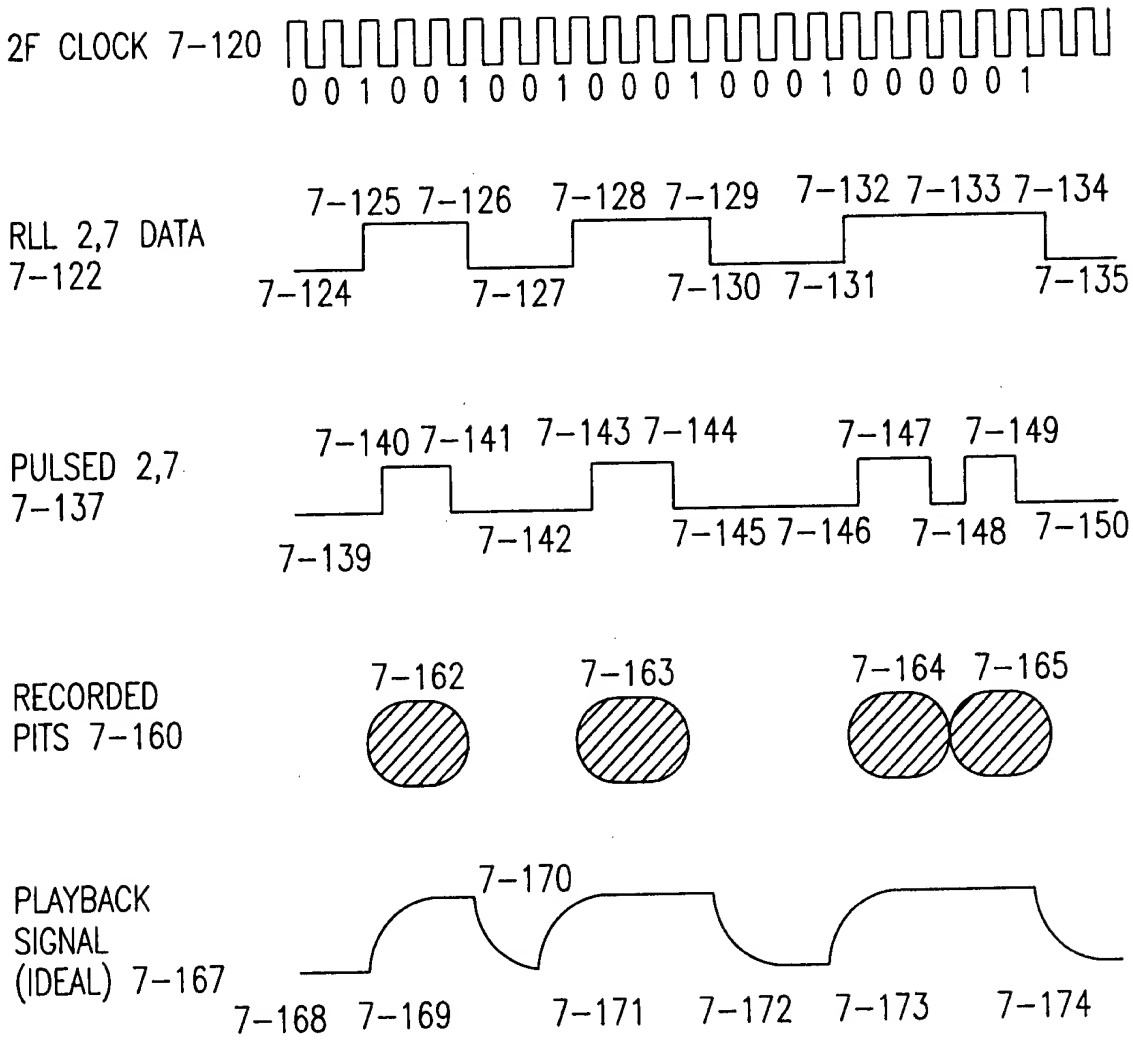

2F CLOCK 7-120
0 0 1 0 0 1 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 0 1
RLL 2,7 DATA
7-122
7-125 7-126 7-128 7-129 7-132 7-133 7-134
7-124 7-127 7-130 7-131 7-135
PULSED 2,7
7-137
7-140 7-141 7-143 7-144 7-147 7-149
7-139 7-142 7-145 7-146 7-148 7-150
RECORDED
PITS 7-160
7-162 7-163 7-164 7-165
PLAYBACK
SIGNAL
(IDEAL) 7-167
7-170
7-168 7-169 7-171 7-172 7-173 7-174

FIG.86B

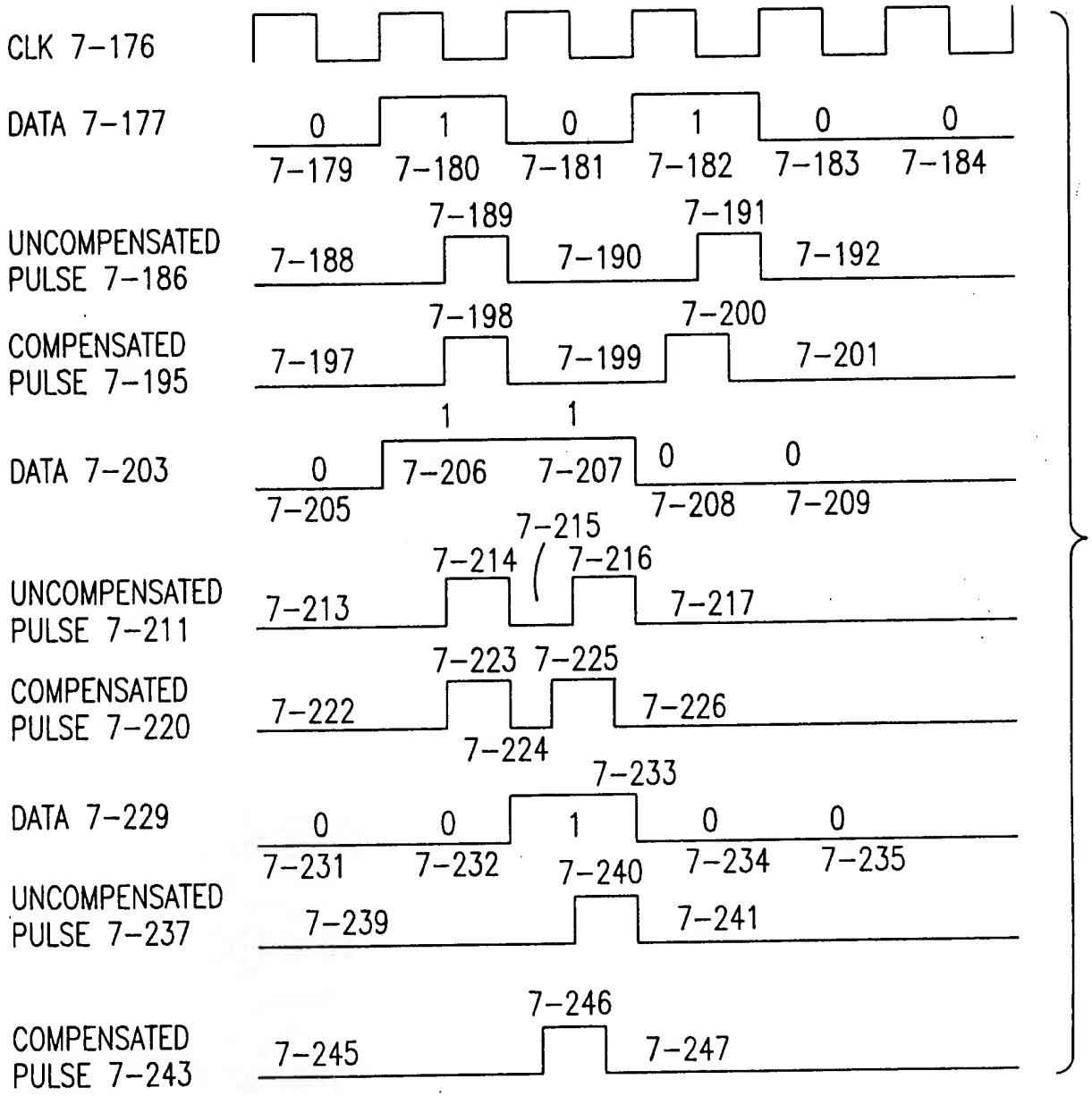

CLK 7-176
DATA 7-177
0
1
0
1
0
0
7-179
7-180
7-181
7-182
7-183
7-184
UNCOMPENSATED PULSE 7-186
7-188
7-189
7-190
7-191
7-192
COMPENSATED PULSE 7-195
7-197
7-198
7-199
7-200
7-201
DATA 7-203
0
1
1
0
0
7-205
7-206
7-207
7-208
7-209
UNCOMPENSATED PULSE 7-211
7-213
7-214
7-215
7-216
7-217
COMPENSATED PULSE 7-220
7-222
7-223
7-224
7-225
7-226
DATA 7-229
0
0
1
0
0
7-231
7-232
7-233
7-234
7-235
UNCOMPENSATED PULSE 7-237
7-239
7-240
7-241
COMPENSATED PULSE 7-243
7-245
7-246
7-247

FIG.87

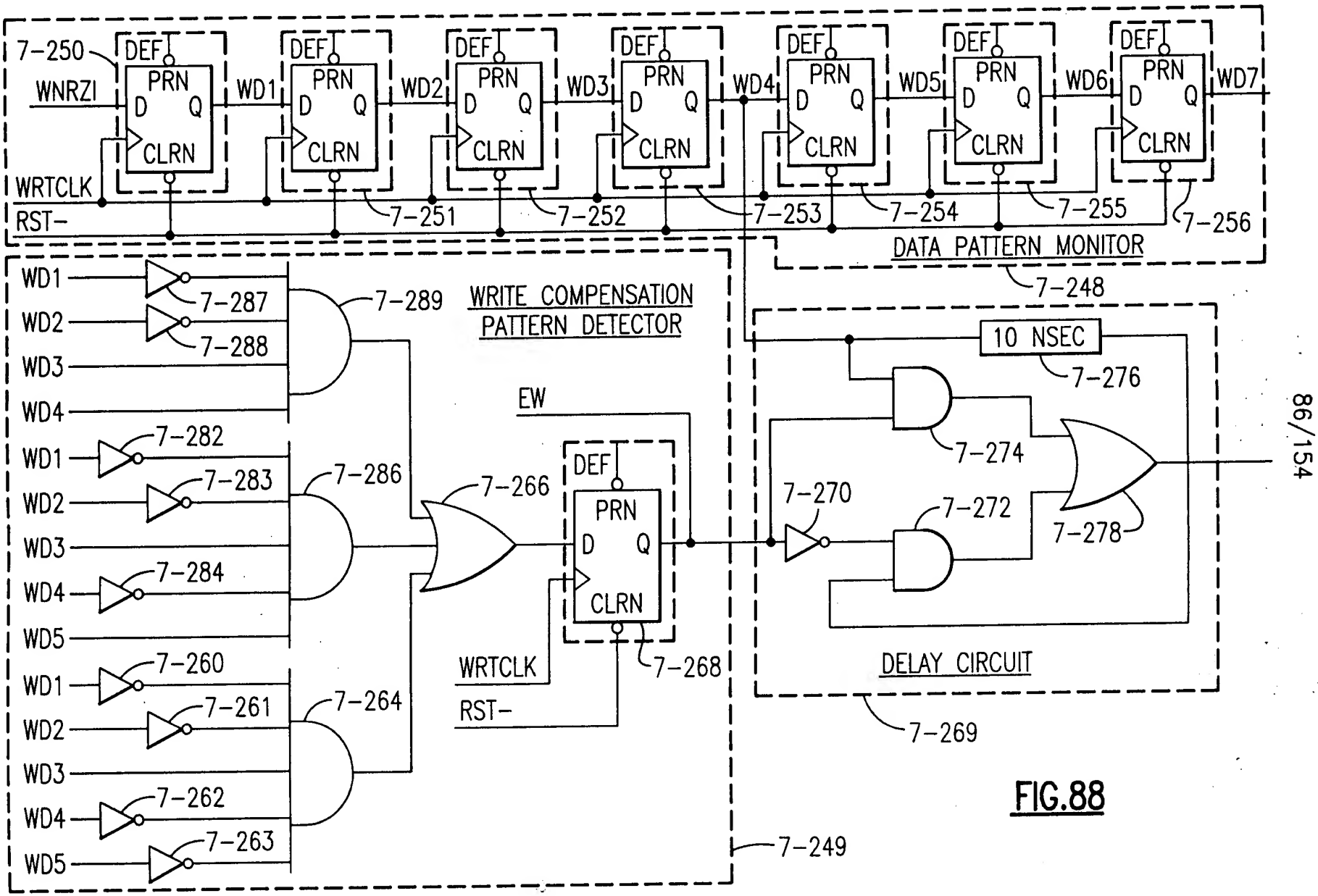

7-250
WNRZI
WRTCLK
RST-
DEF
PRN
D
Q
CLRN
WD1
WD2
WD3
WD4
WD5
WD6
WD7
7-251
7-252
7-253
7-254
7-255
7-256
DATA PATTERN MONITOR
7-248
WRITE COMPENSATION
PATTERN DETECTOR
7-289
7-287
7-288
7-282
7-283
7-284
7-286
7-260
7-261
7-262
7-263
7-264
EW
7-266
7-268
WRTCLK
RST-
10 NSEC
7-276
7-274
7-270
7-272
7-278
DELAY CIRCUIT
7-269
7-249

FIG.88

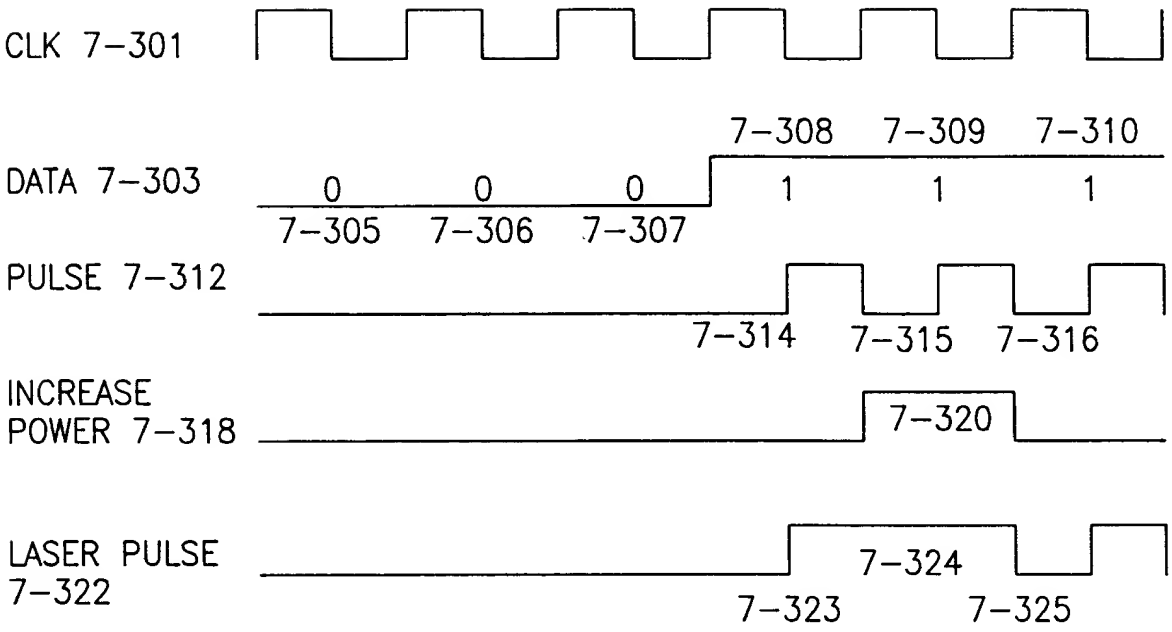

CLK 7-301
DATA 7-303
0
0
0
1
1
1
7-308
7-309
7-310
7-305
7-306
7-307
PULSE 7-312
7-314
7-315
7-316
INCREASE POWER 7-318
7-320
LASER PULSE 7-322
7-324
7-323
7-325

FIG.89

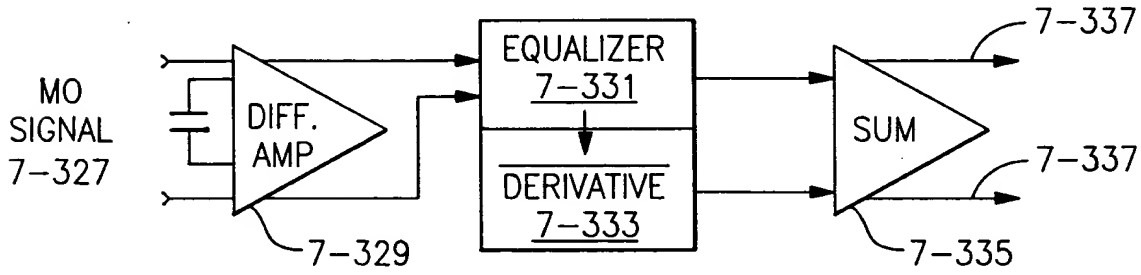

MO SIGNAL 7-327
DIFF. AMP
7-329
EQUALIZER 7-331
DERIVATIVE 7-333
SUM
7-337
7-337
7-335

FIG.91

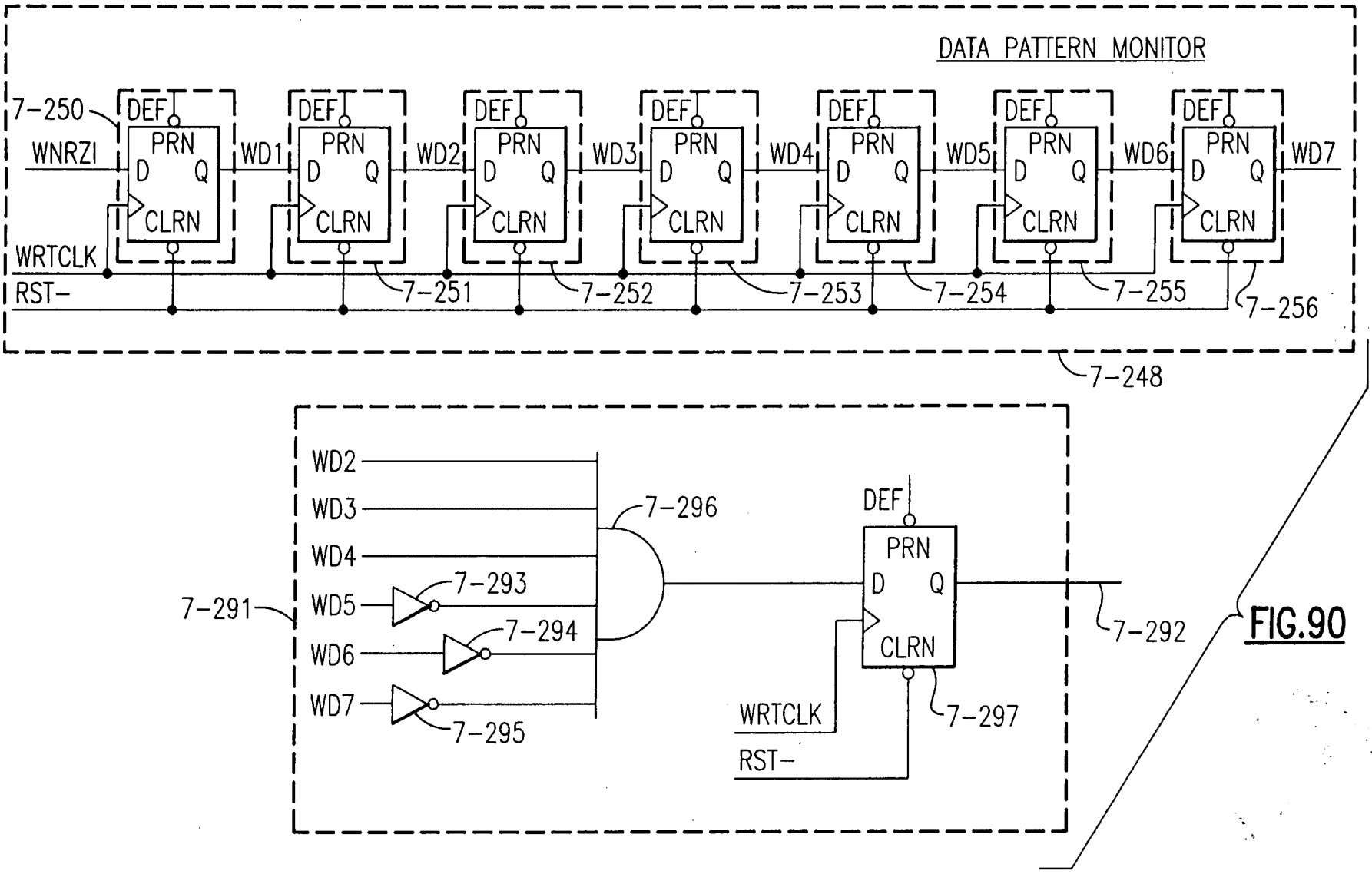

DATA PATTERN MONITOR
7-250
WNRZI
WRTCLK
RST-
DEF
PRN
D
Q
CLRN
WD1
WD2
WD3
WD4
WD5
WD6
WD7
7-251
7-252
7-253
7-254
7-255
7-256
7-248
WD2
WD3
WD4
WD5
WD6
WD7
7-291
7-293
7-294
7-295
7-296
7-297
7-292
WRTCLK
RST-

FIG.90

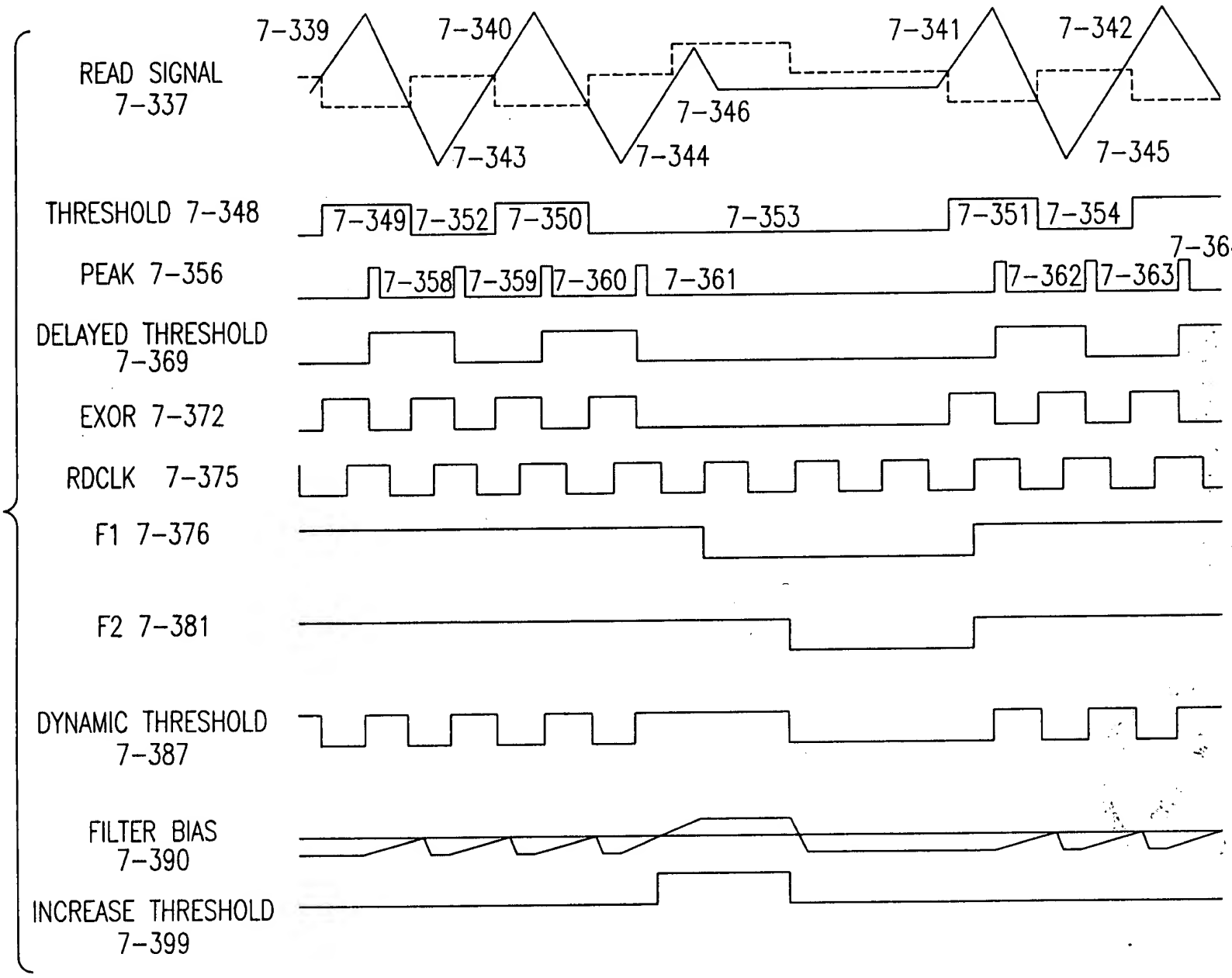

7-339
7-340
7-341
7-342
READ SIGNAL
7-337
7-343
7-344
7-346
7-345
THRESHOLD 7-348
7-349
7-352
7-350
7-353
7-351
7-354
7-364
PEAK 7-356
7-358
7-359
7-360
7-361
7-362
7-363
DELAYED THRESHOLD
7-369
EXOR 7-372
RDCLK 7-375
F1 7-376
F2 7-381
DYNAMIC THRESHOLD
7-387
FILTER BIAS
7-390
INCREASE THRESHOLD
7-399

FIG.92

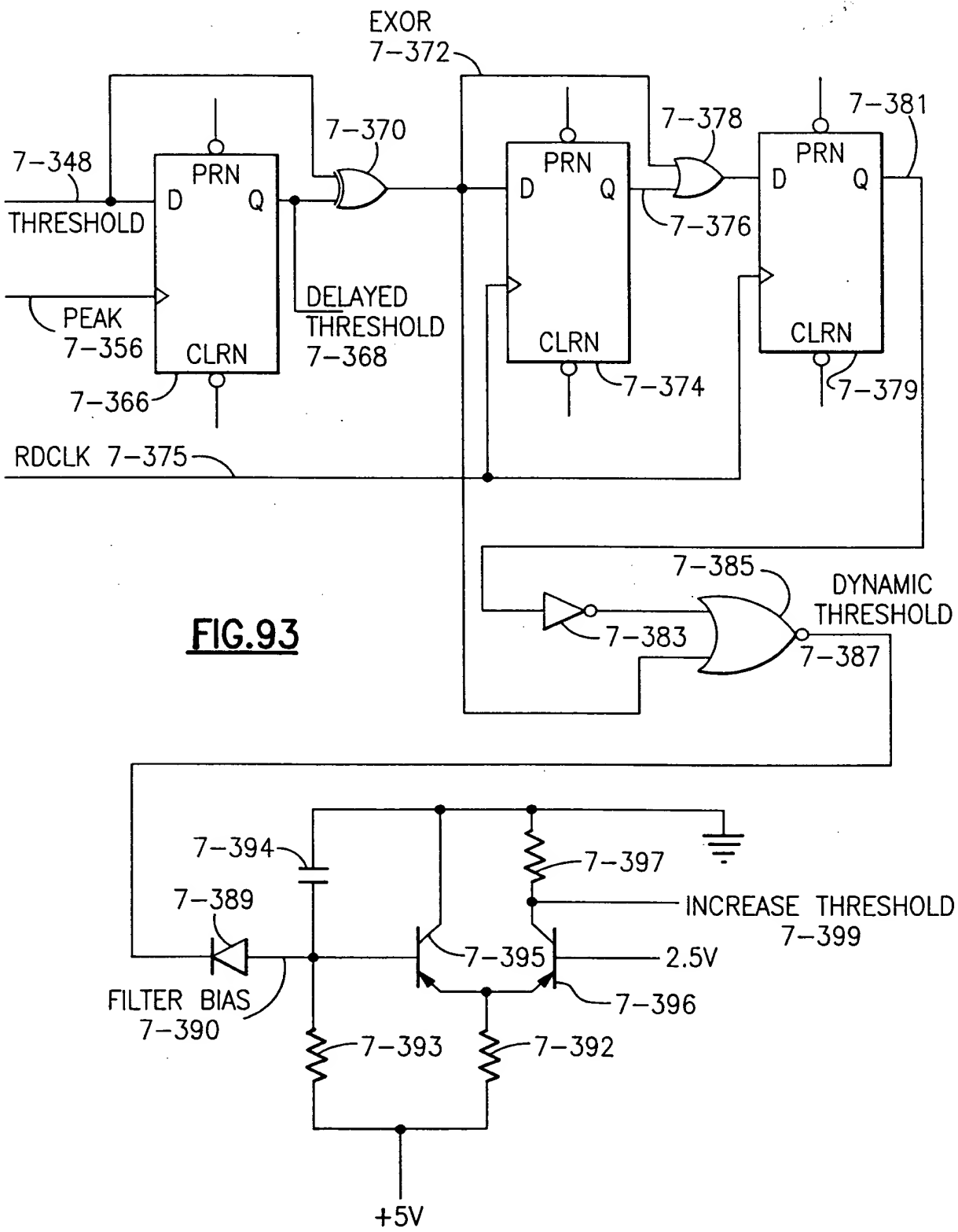

EXOR
7-372
7-370
7-348
THRESHOLD
PRN
D
Q
CLRN
PEAK
7-356
7-366
DELAYED
THRESHOLD
7-368
7-378
7-376
7-374
7-381
7-379
RDCLK 7-375
7-385
DYNAMIC
THRESHOLD
7-383
7-387
7-394
7-389
FILTER BIAS
7-390
7-397
INCREASE THRESHOLD
7-399
7-395
2.5V
7-396
7-393
7-392
+5V

FIG.93

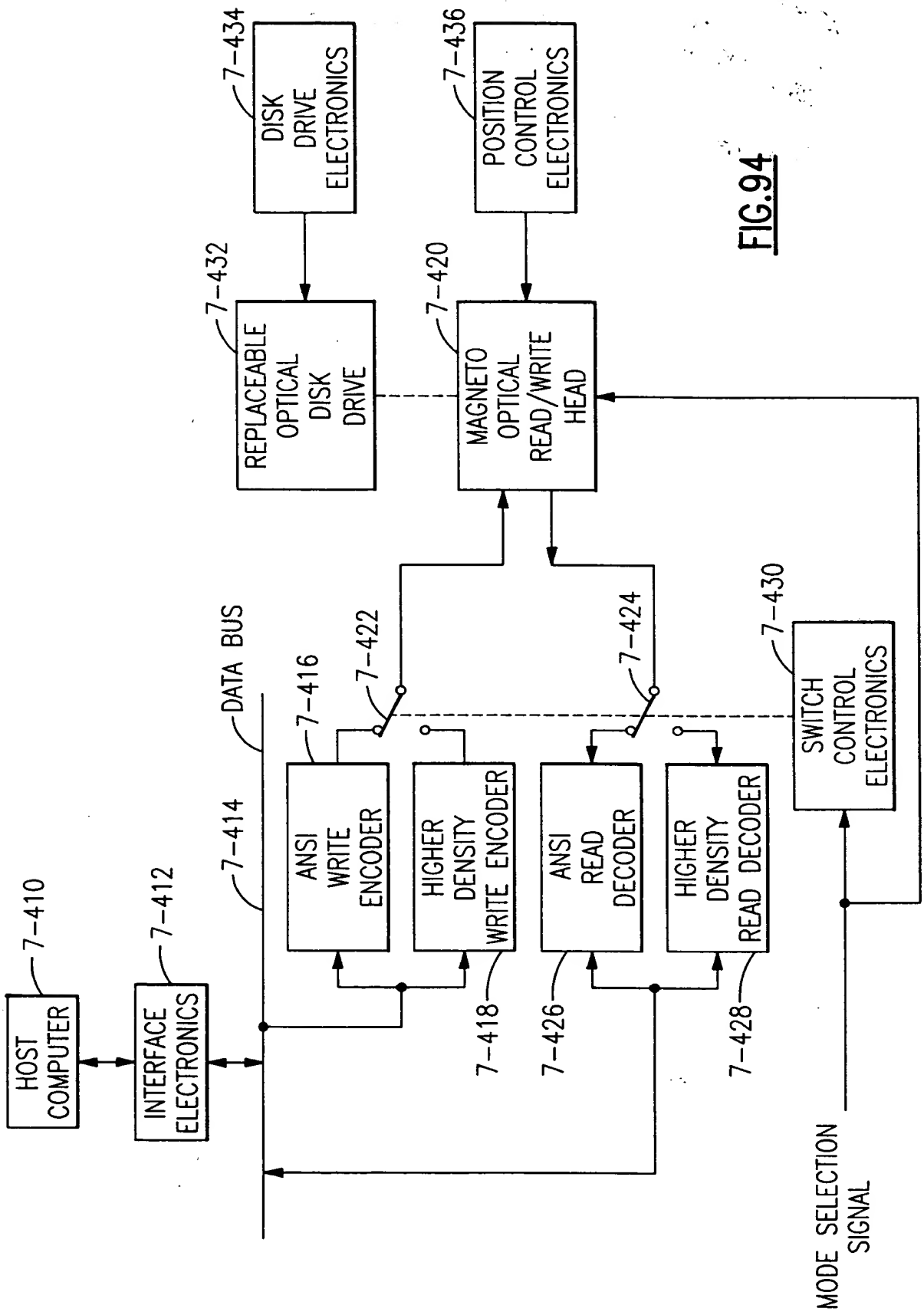

HOST COMPUTER
7-410
INTERFACE ELECTRONICS
7-412
7-414
DATA BUS
ANSI WRITE ENCODER
7-416
HIGHER DENSITY WRITE ENCODER
7-418
ANSI READ DECODER
7-426
HIGHER DENSITY READ DECODER
7-428
7-422
7-424
7-430
SWITCH CONTROL ELECTRONICS
MODE SELECTION SIGNAL
REPLACEABLE OPTICAL DISK DRIVE
7-432
MAGNETO OPTICAL READ/WRITE HEAD
7-420
DISK DRIVE ELECTRONICS
7-434
POSITION CONTROL ELECTRONICS
7-436

FIG.94

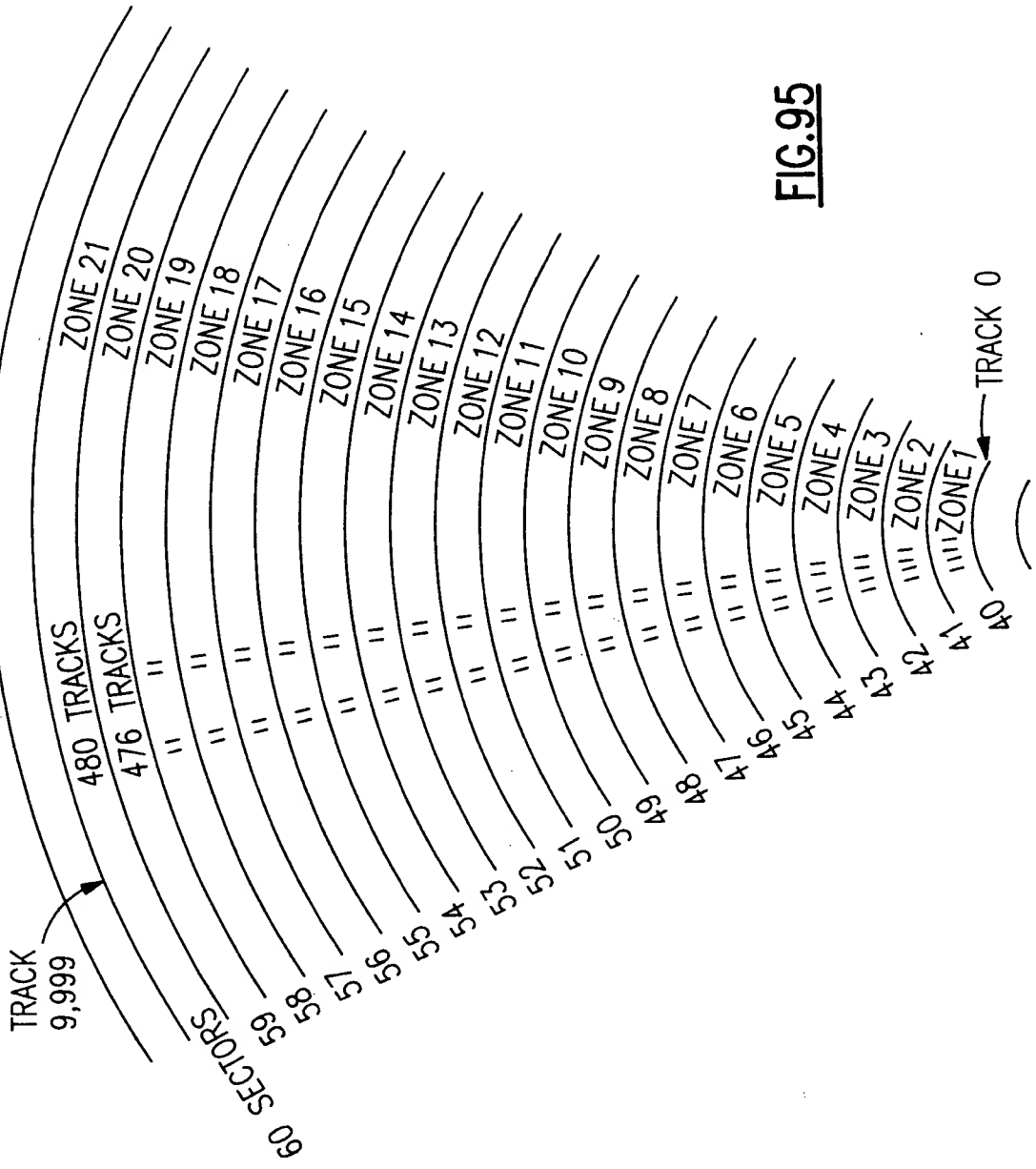

TRACK LAYOUT
TRACK 9,999
480 TRACKS
476 TRACKS
60 SECTORS
59
58
57
56
55
54
53
52
51
50
49
48
47
46
45
44
43
42
41
40
ZONE 21
ZONE 20
ZONE 19
ZONE 18
ZONE 17
ZONE 16
ZONE 15
ZONE 14
ZONE 13
ZONE 12
ZONE 11
ZONE 10
ZONE 9
ZONE 8
ZONE 7
ZONE 6
ZONE 5
ZONE 4
ZONE 3
ZONE 2
ZONE 1
TRACK 0

FIG.95

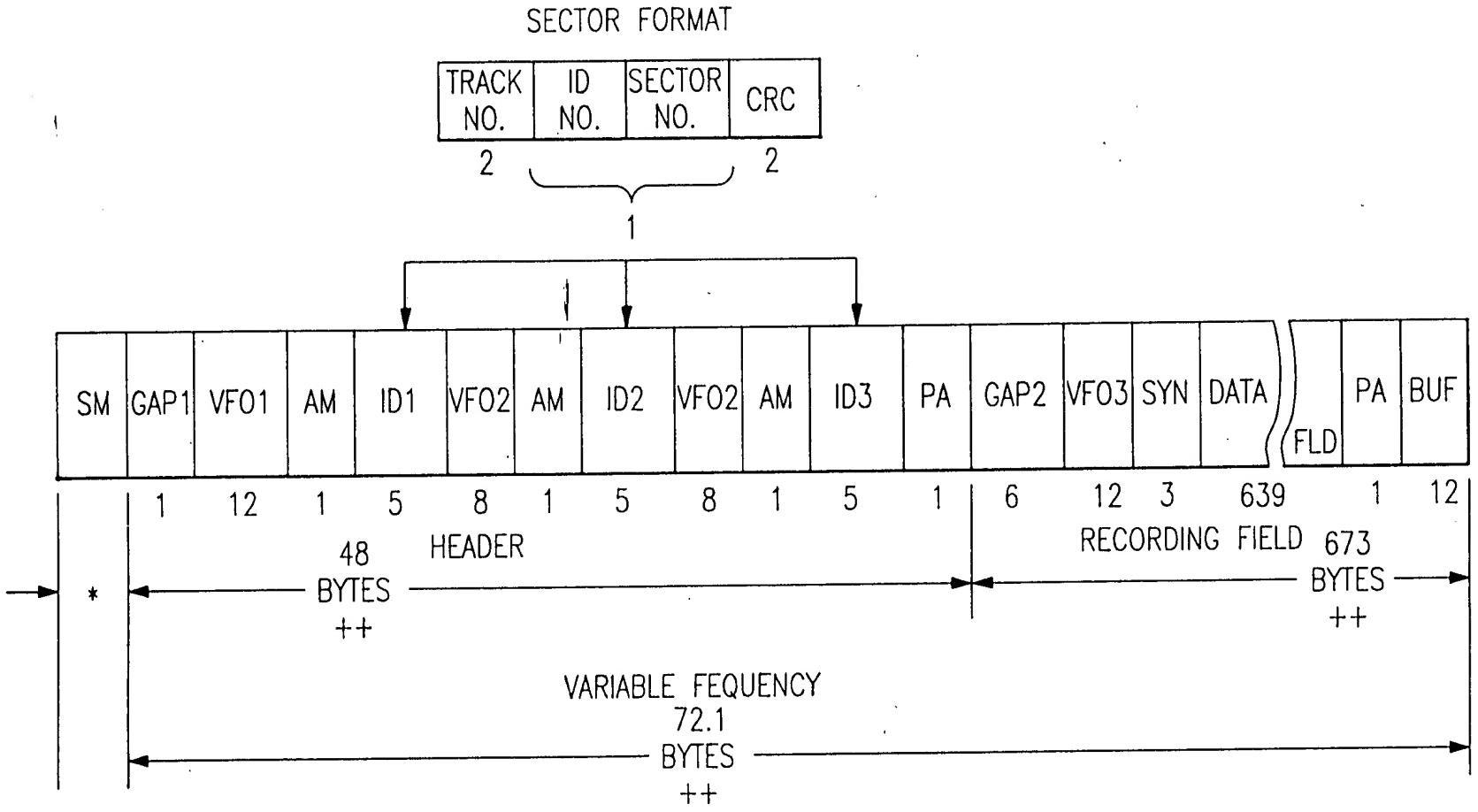


FIG.96

* FIXED FREQUENCY
80 CHANNEL BITS

++ 1 BYTE = 9 CHANNEL BITS

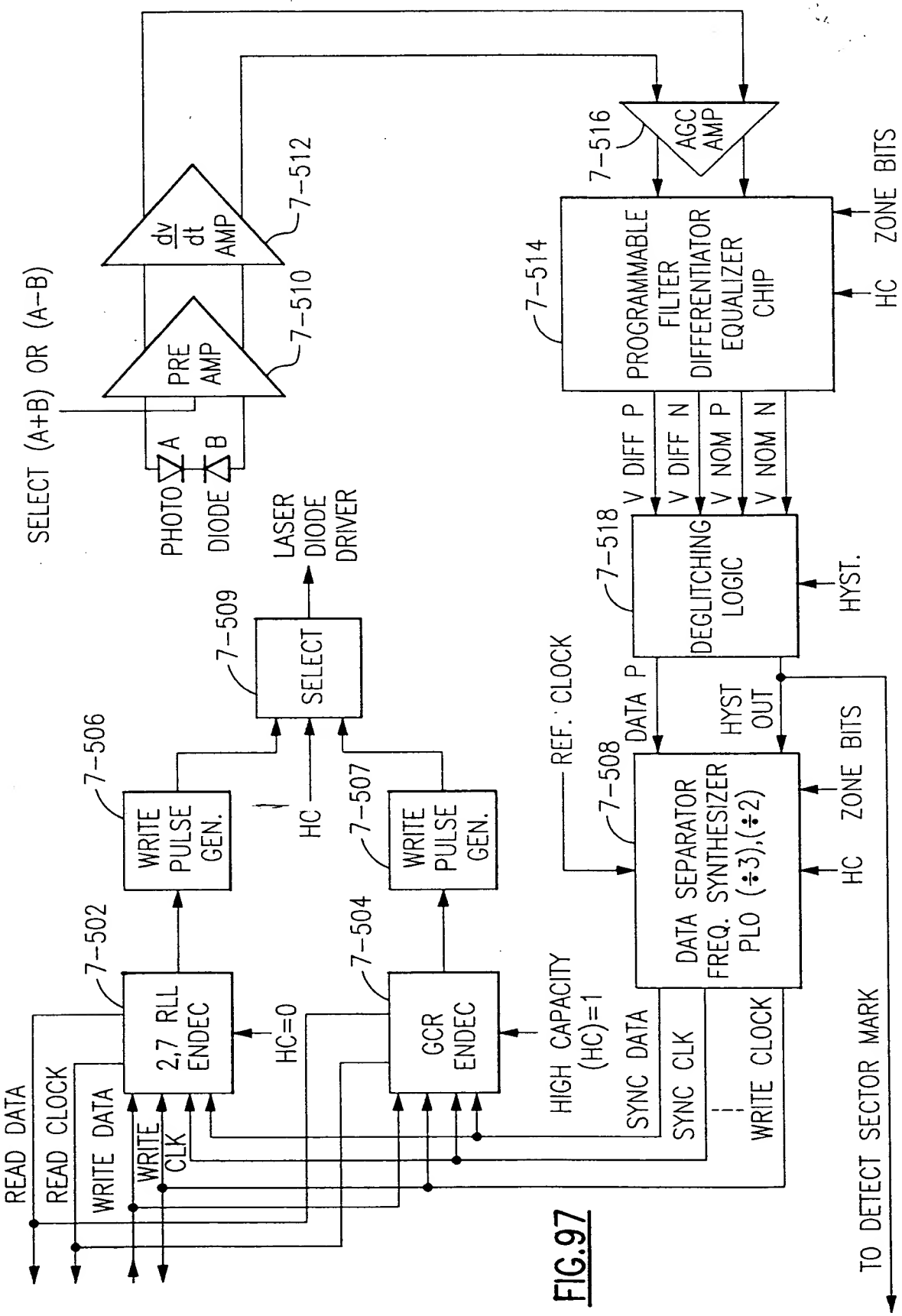

READ DATA
READ CLOCK
WRITE DATA
WRITE CLK
2,7 RLL ENDEC
7-502
HC=0
GCR ENDEC
7-504
HIGH CAPACITY (HC)=1
WRITE PULSE GEN.
7-506
WRITE PULSE GEN.
7-507
HC
SELECT
7-509
LASER DIODE DRIVER
SELECT (A+B) OR (A-B)
PHOTO DIODE
A
B
PRE AMP
7-510
dv/dt AMP
7-512
AGC AMP
7-516
PROGRAMMABLE FILTER DIFFERENTIATOR EQUALIZER CHIP
7-514
HC ZONE BITS
V DIFF P
V DIFF N
V NOM P
V NOM N
DEGLITCHING LOGIC
7-518
HYST.
REF. CLOCK
DATA P
HYST OUT
DATA SEPARATOR FREQ. SYNTHESIZER PLO (÷3),(÷2)
7-508
HC ZONE BITS
SYNC DATA
SYNC CLK
WRITE CLOCK
TO DETECT SECTOR MARK

FIG.97

ZONE	(ABSOLUTE)	NO. OF SECTORS PER TRACK	NO. OF SEC./ZONE	WRITE FREQ. (MHZ)
1	0 – 475	40	19040	10.591
2	476 – 951	41	19516	10.852
3	952 – 1427	42	19992	11.117
4	1428 – 1903	43	20468	11.368
5	1904 – 2379	44	20944	11.636
6	2380 – 2855	45	21420	11.963
7	2856 – 3331	46	21896	12.180
8	3332 – 3807	47	22372	12.459
9	3808 – 4283	48	22848	12.705
10	4284 – 4759	49	23324	12.992
11	4760 – 5235	50	23800	13.257
12	5236 – 5711	51	24276	13.533
13	5712 – 6187	52	24752	13.831
14	6188 – 6663	53	25228	14.086
15	6664 – 7139	54	25704	14.362
16	7140 – 7615	55	26180	14.626
17	7616 – 8091	56	26656	14.914
18	8092 – 8567	57	27132	15.130
19	8568 – 9043	58	27608	15.467
20	9044 – 9519	59	28084	15.694
21	9520 – 9999	60	28800	15.950
			TOTAL SEC. 500,040 x 512 B/S = 256.02 MB	

FIG.98

FIG.99

CRC FOR ID FIELDS
(1) $G(x) = x^{16} + x^{12} + x^5 + 1$
(2) $R(x) = \left(\sum_{i=8}^{i=23} \bar{b}_i \, x^i + \sum_{i=0}^{i=7} b_i \, x^i \right) x^{16} \text{ Mod } G(x)$
(3) $R_C(x) = \sum_{k=0}^{k=15} c_k \, x^k$

8 BIT BYTE		ENCODED	8 BIT BYTE		ENCODED
HEX	BINARY	9 BIT BYTE	HEX	BINARY	9 BIT BYTE
00	00000000	011001011	40	01000000	010001011
01	00000001	011001001	41	01000001	010001001
02	00000010	001001101	42	01000010	010010010
03	00000011	101100011	43	01000011	010010011
04	00000100	011001010	44	01000100	010001010
05	00000101	101100101	45	01000101	010010101
06	00000110	101100110	46	01000110	010010110
07	00000111	101100111	47	01000111	010010111
08	00001000	011001111	48	01001000	010001111
09	00001001	101101001	49	01001001	010011001
0A	00001010	101101010	4A	01001010	010011010
0B	00001011	101101011	4B	01001011	010011011
0C	00001100	011001110	4C	01001100	010001110
0D	00001101	101101101	4D	01001101	010011101
0E	00001110	101101110	4E	01001110	010011110
0F	00001111	101101111	4F	01001111	010011111
10	00010000	001001011	50	01010000	011100101
11	00010001	001001001	51	01010001	001100101
12	00010010	011001101	52	01010010	010110010
13	00010011	100100011	53	01010011	010110011
14	00010100	001001010	54	01010100	010100101
15	00010101	100100101	55	01010101	010110101
16	00010110	100100110	56	01010110	010110110
17	00010111	100100111	57	01010111	010110111
18	00011000	001001111	58	01011000	111100101
19	00011001	100101001	59	01011001	010111001
1A	00011010	100101010	5A	01011010	010111010
1B	00011011	100101011	5B	01011011	010111011
1C	00011100	001001110	5C	01011100	110100101
1D	00011101	100101101	5D	01011101	010111101
1E	00011110	100101110	5E	01011110	010111110
1F	00011111	100101111	5F	01011111	010111111

FIG.100A(1)

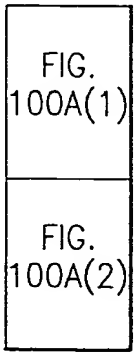


FIG.100A

20	00100000	101001111
21	00100001	101001101
22	00100010	001010010
23	00100011	001010011
24	00100100	101001110
25	00100101	001010101
26	00100110	001010110
27	00100111	001010111
28	00101000	101001011
29	00101001	001011001
2A	00101010	001011010
2B	00101011	001011011
2C	00101100	101001010
2D	00101101	001011101
2E	00101110	001011110
2F	00101111	001011111
30	00110000	011100011
31	00110001	001100011
32	00110010	001110010
33	00110011	001110011
34	00110100	010100011
35	00110101	001110101
36	00110110	001110110
37	00110111	001110111
38	00111000	111100011
39	00111001	001111001
3A	00111010	001111010
3B	00111011	001111011
3C	00111100	110100011
3D	00111101	001111101
3E	00111110	001111110
3F	00111111	001111111
POSITION IN BYTE	8 1	9 1

60	01100000	011100110
61	01100001	001100110
62	01100010	011010010
63	01100011	011010011
64	01100100	010100110
65	01100101	011010101
66	01100110	011010110
67	01100111	011010111
68	01101000	111100110
69	01101001	011011001
6A	01101010	011011010
6B	01101011	011011011
6C	01101100	110100110
6D	01101101	011011101
6E	01101110	011011110
6F	01101111	011011111
70	01110000	011100111
71	01110001	001100111
72	01110010	011110010
73	01110011	011110011
74	01110100	010100111
75	01110101	011110101
76	01110110	011110110
77	01110111	011110111
78	01111000	111100111
79	01111001	011111001
7A	01111010	011111010
7B	01111011	011111011
7C	01111100	110100111
7D	01111101	011111101
7E	01111110	011111110
7F	01111111	011111111
POSITION IN BYTE	8 1	9 1

FIG.100A(2)

8 BIT BYTE		ENCODED
HEX	BINARY	9 BIT BYTE
80	10000000	111001011
81	10000001	111001001
82	10000010	100010010
83	10000011	100010011
84	10000100	111001010
85	10000101	100010101
86	10000110	100010110
87	10000111	100010111
88	10001000	111001111
89	10001001	100011001
8A	10001010	100011010
8B	10001011	100011011
8C	10001100	111001110
8D	10001101	100011101
8E	10001110	100011110
8F	10001111	100011111
90	10010000	011101001
91	10010001	001101001
92	10010010	100110010
93	10010011	100110011
94	10010100	010101001
95	10010101	100110101
96	10010110	100110110
97	10010111	100110111
98	10011000	111101001
99	10011001	100111001
9A	10011010	100111010
9B	10011011	100111011
9C	10011100	110101001
9D	10011101	100111101
9E	10011110	100111110
9F	10011111	100111111

8 BIT BYTE		ENCODED
HEX	BINARY	9 BIT BYTE
C0	11000000	110001011
C1	11000001	110001001
C2	11000010	110010010
C3	11000011	110010011
C4	11000100	110001010
C5	11000101	110010101
C6	11000110	110010110
C7	11000111	110010111
C8	11001000	110001111
C9	11001001	110011001
CA	11001010	110011010
CB	11001011	110011011
CC	11001100	110001110
CD	11001101	110011101
CE	11001110	110011110
CF	11001111	110011111
D0	11010000	011101101
D1	11010001	001101101
D2	11010010	110110010
D3	11010011	110110011
D4	11010100	010101101
D5	11010101	110110101
D6	11010110	110110110
D7	11010111	110110111
D8	11011000	111101101
D9	11011001	110111001
DA	11011010	110111010
DB	11011011	110111011
DC	11011100	110101101
DD	11011101	110111101
DE	11011110	110111110
DF	11011111	110111111

FIG.100B(1)

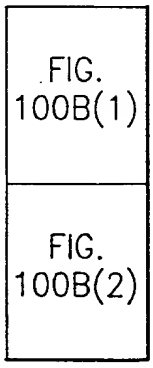


FIG.100B

A0	10100000	011101010		E0	11100000	011101110
A1	10100001	001101010		E1	11100001	001101110
A2	10100010	101010010		E2	11100010	111010010
A3	10100011	101010011		E3	11100011	111010011
A4	10100100	010101010		E4	11100100	010101110
A5	10100101	101010101		E5	11100101	111010101
A6	10100110	101010110		E6	11100110	111010110
A7	10100111	101010111		E7	11100111	111010111
A8	10101000	111101010		E8	11101000	111101110
A9	10101001	101011001		E9	11101001	111011001
AA	10101010	101011010		EA	11101010	111011010
AB	10101011	101011011		EB	11101011	111011011
AC	10101100	110101010		EC	11101100	110101110
AD	10101101	101011101		ED	11101101	111011101
AE	10101110	101011110		EE	11101110	111011110
AF	10101111	101011111		EF	11101111	111011111
B0	10110000	011101011		F0	11110000	011101111
B1	10110001	001101011		F1	11110001	001101111
B2	10110010	101110010		F2	11110010	111110010
B3	10110011	101110011		F3	11110011	111110011
B4	10110100	010101011		F4	11110100	010101111
B5	10110101	101110101		F5	11110101	111110101
B6	10110110	101110110		F6	11110110	111110110
B7	10110111	101110111		F7	11110111	111110111
B8	10111000	111101011		F8	11111000	111101111
B9	10111001	101111001		F9	11111001	111111001
BA	10111010	101111010		FA	11111010	111111010
BB	10111011	101111011		FB	11111011	111111011
BC	10111100	110101011		FC	11111100	110101111
BD	10111101	101111101		FD	11111101	111111101
BE	10111110	101111110		FE	11111110	111111110
BF	10111111	101111111		FF	11111111	111111111
POSITION IN BYTE	8 1	9 1		POSITION IN BYTE	8 1	9 1

FIG.100B(2)

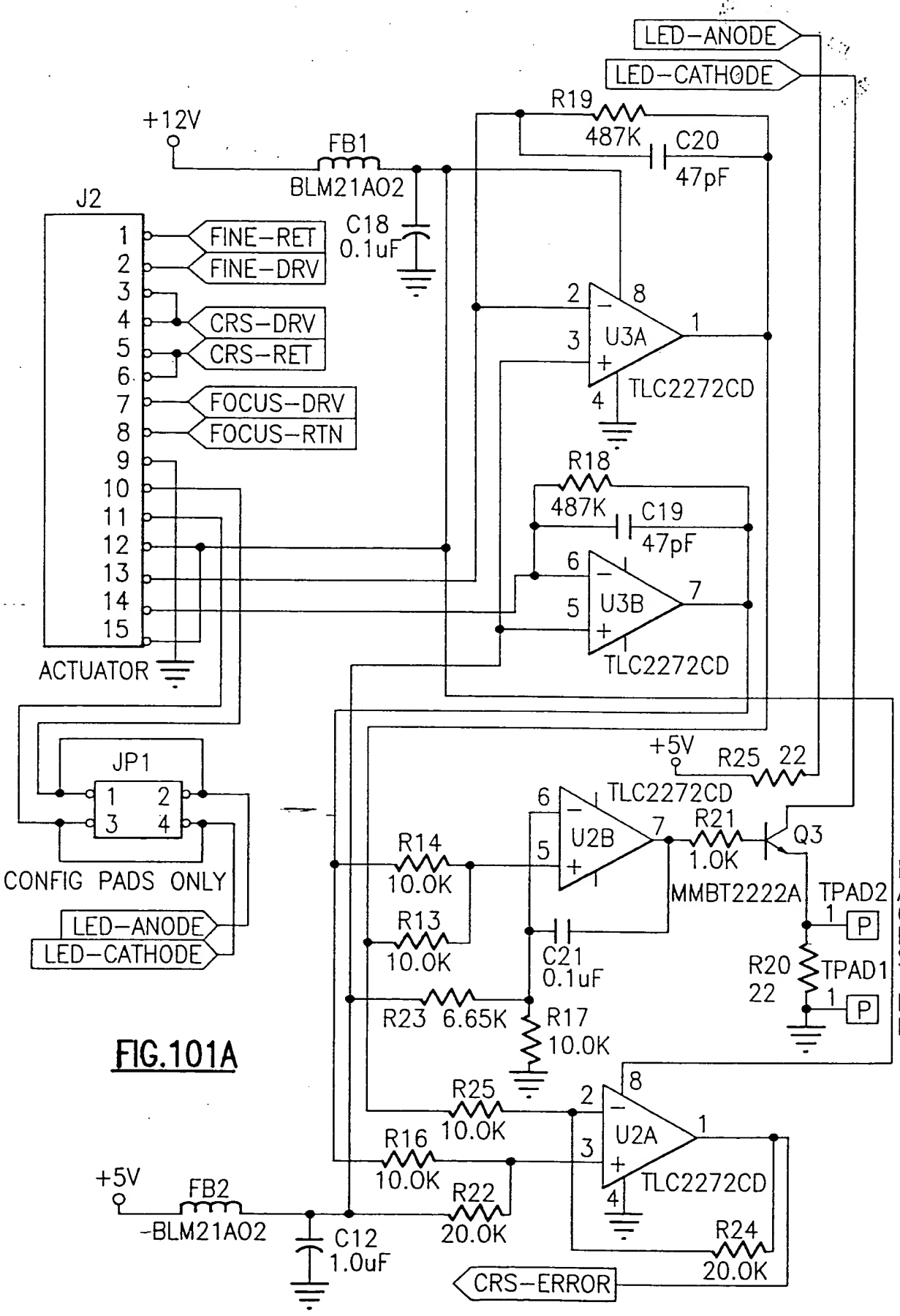

LED-ANODE
LED-CATHODE
R19
487K
C20
47pF
+12V
FB1
BLM21A02
C18
0.1uF
J2
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
FINE-RET
FINE-DRV
CRS-DRV
CRS-RET
FOCUS-DRV
FOCUS-RTN
ACTUATOR
U3A
TLC2272CD
R18
487K
C19
47pF
U3B
TLC2272CD
JP1
CONFIG PADS ONLY
LED-ANODE
LED-CATHODE
+5V
R25 22
TLC2272CD
U2B
R14
10.0K
R13
10.0K
C21
0.1uF
R21
1.0K
Q3
MMBT2222A
TPAD2
TPAD1
R20
22
BACKSIDE
R23 6.65K
R17
10.0K
R25
10.0K
R16
10.0K
R22
20.0K
U2A
TLC2272CD
+5V
FB2
-BLM21A02
C12
1.0uF
R24
20.0K
CRS-ERROR

FIG.101A

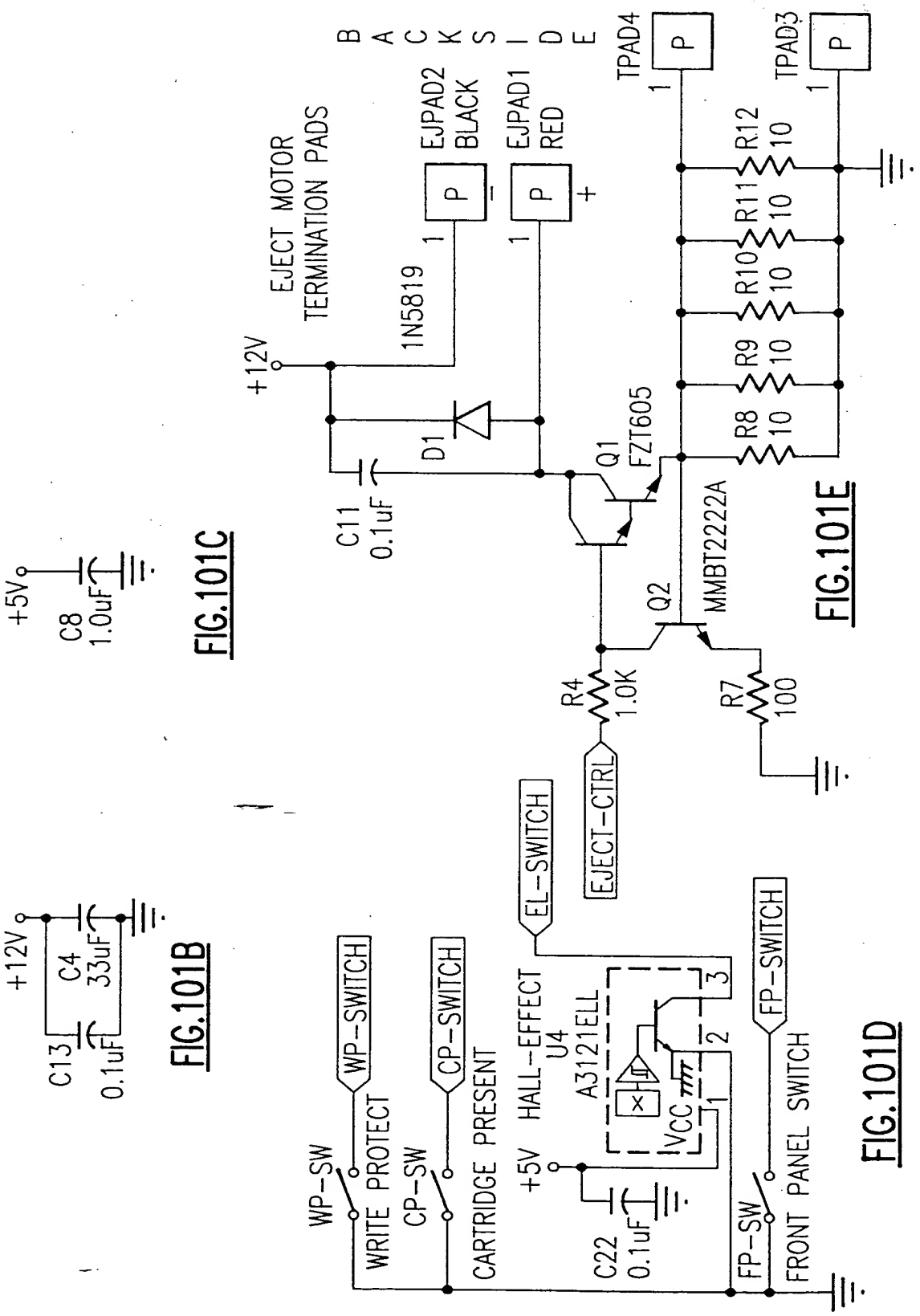


FIG.101B

FIG.101C

FIG.101D

FIG.101E

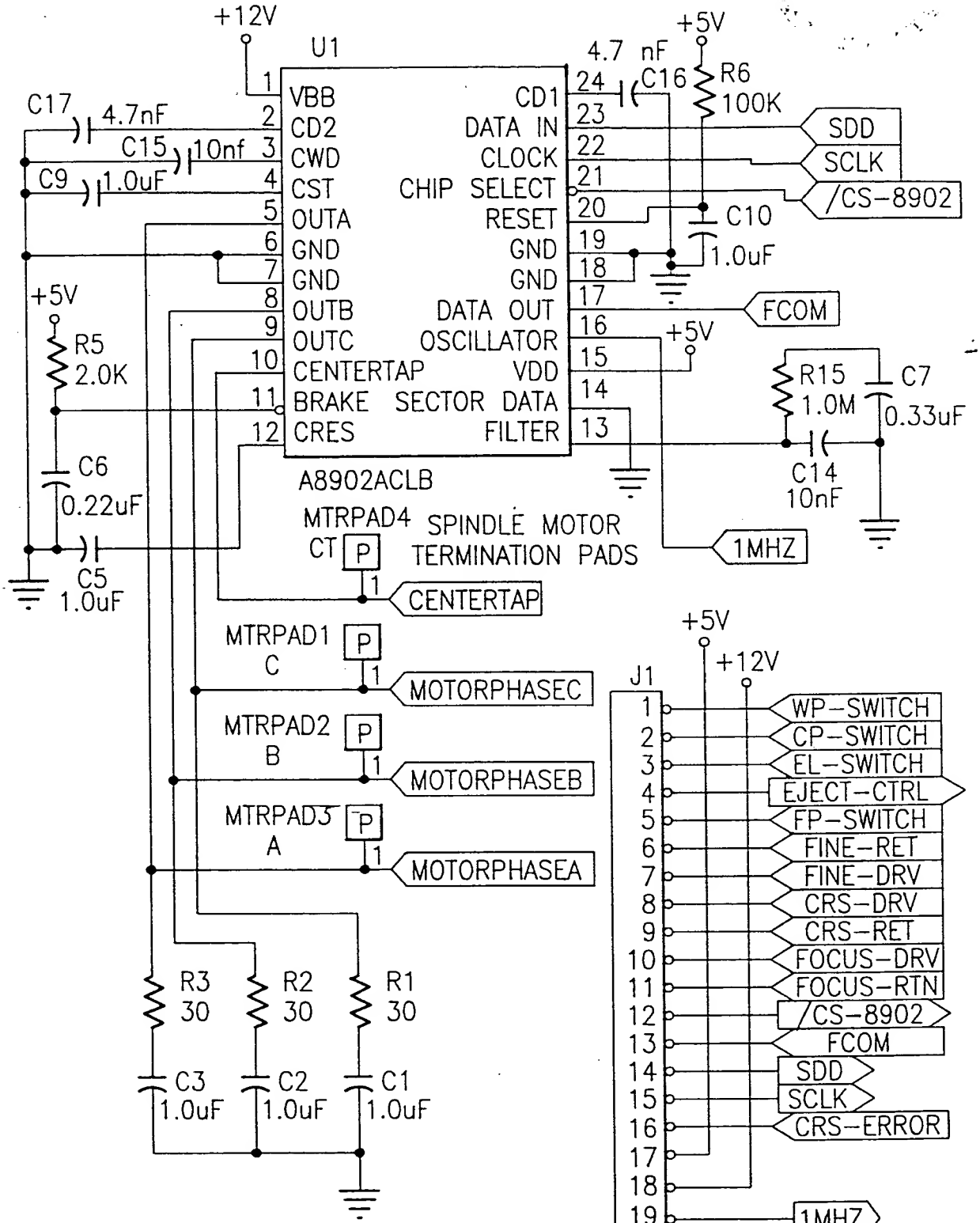


FIG.101F

FIG.101G

FIG. 102A
FIG. 102B

FIG.102

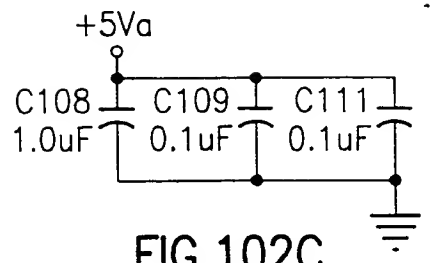


FIG.102C

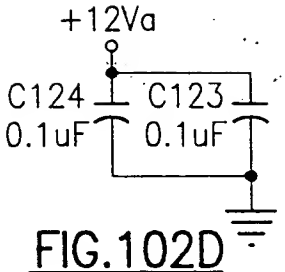


FIG.102D

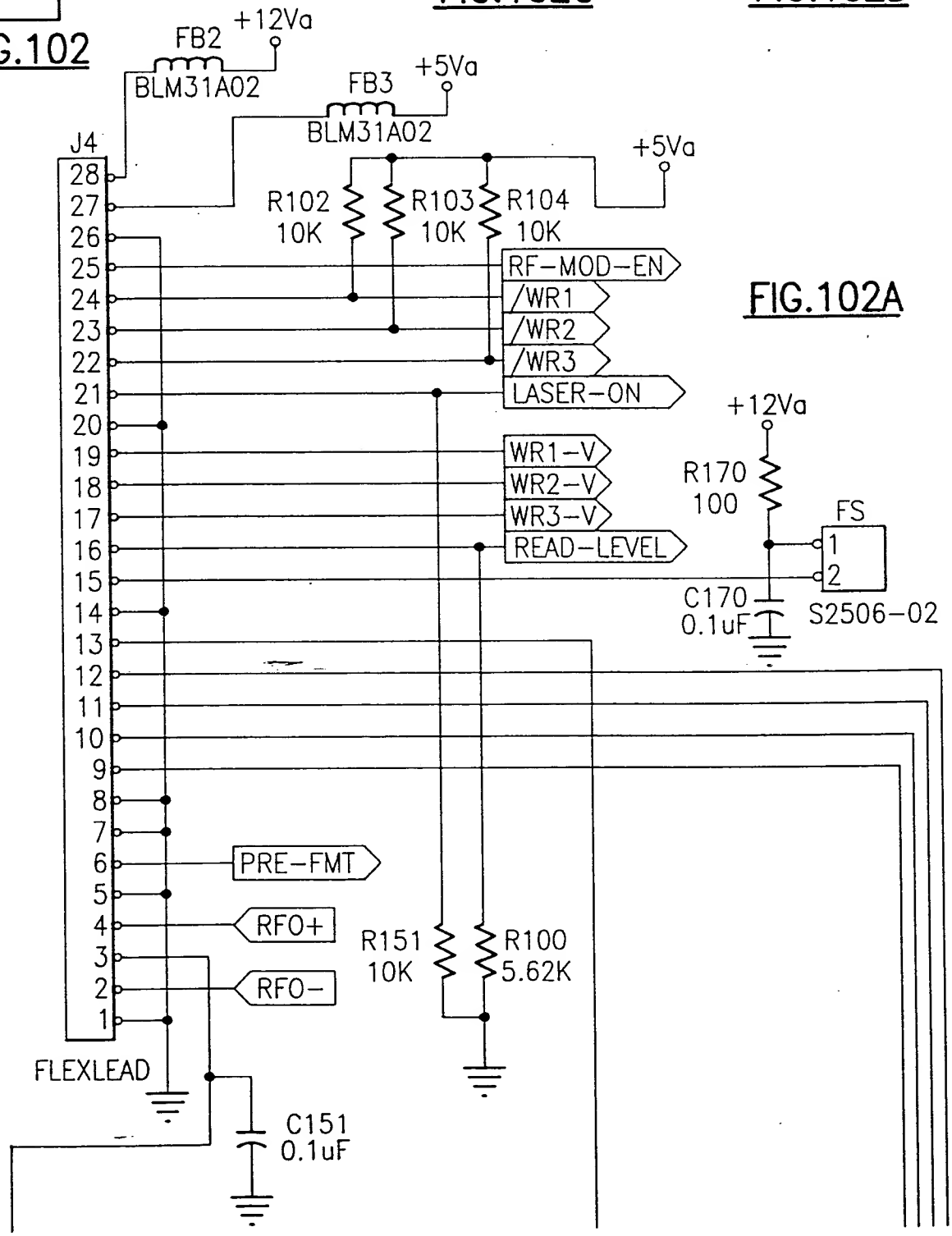


FIG.102A

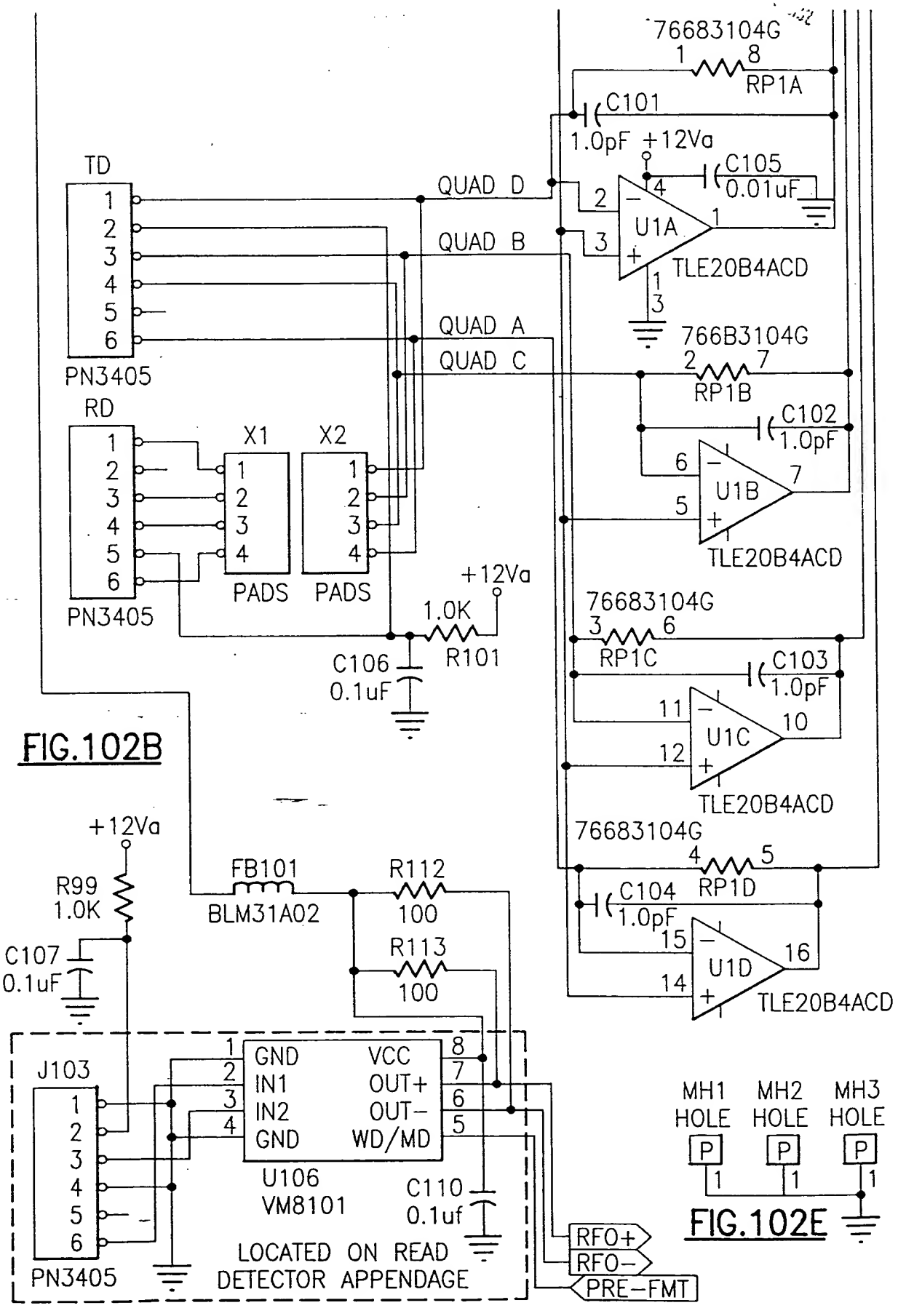


FIG.102B

FIG.102E

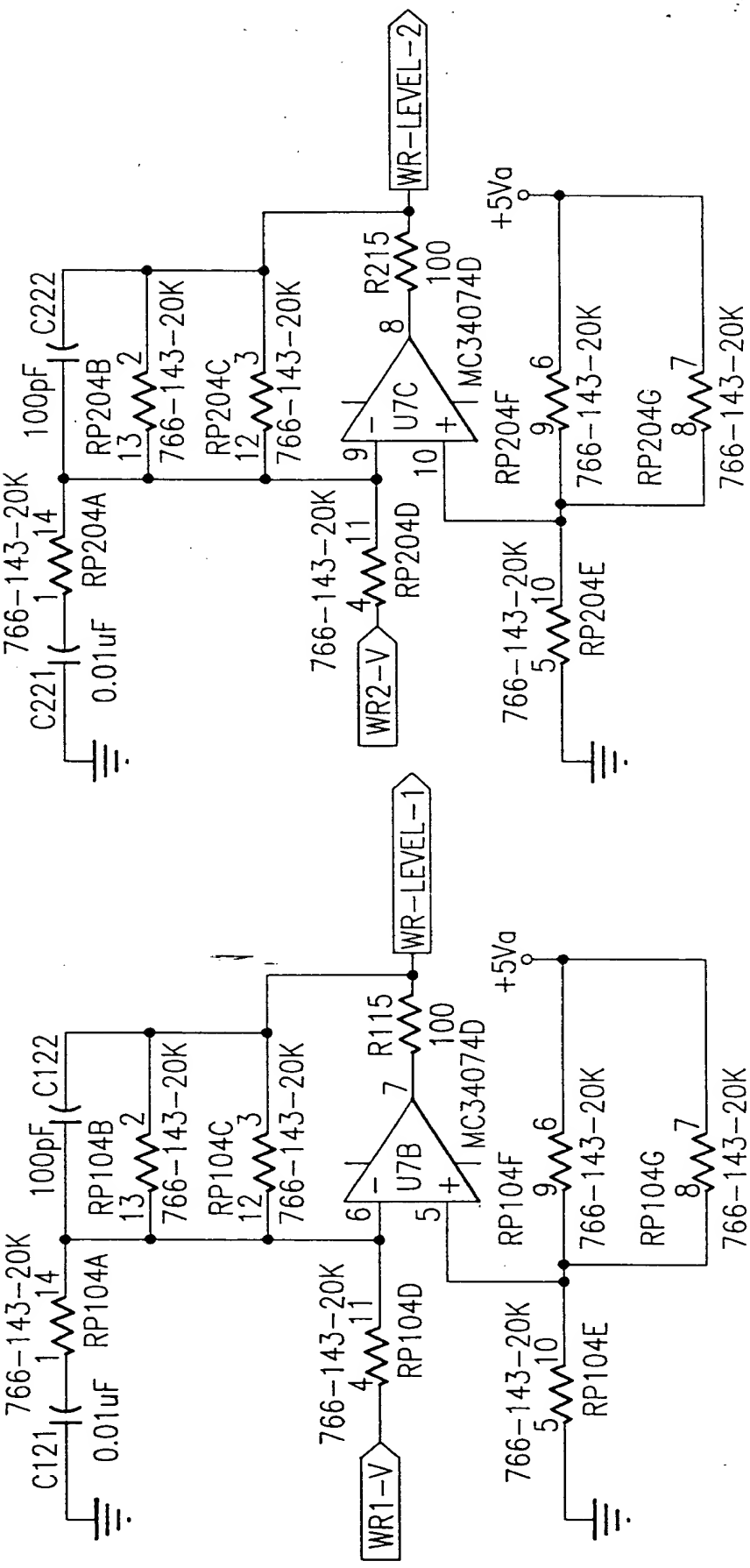


FIG.103A

FIG.103B

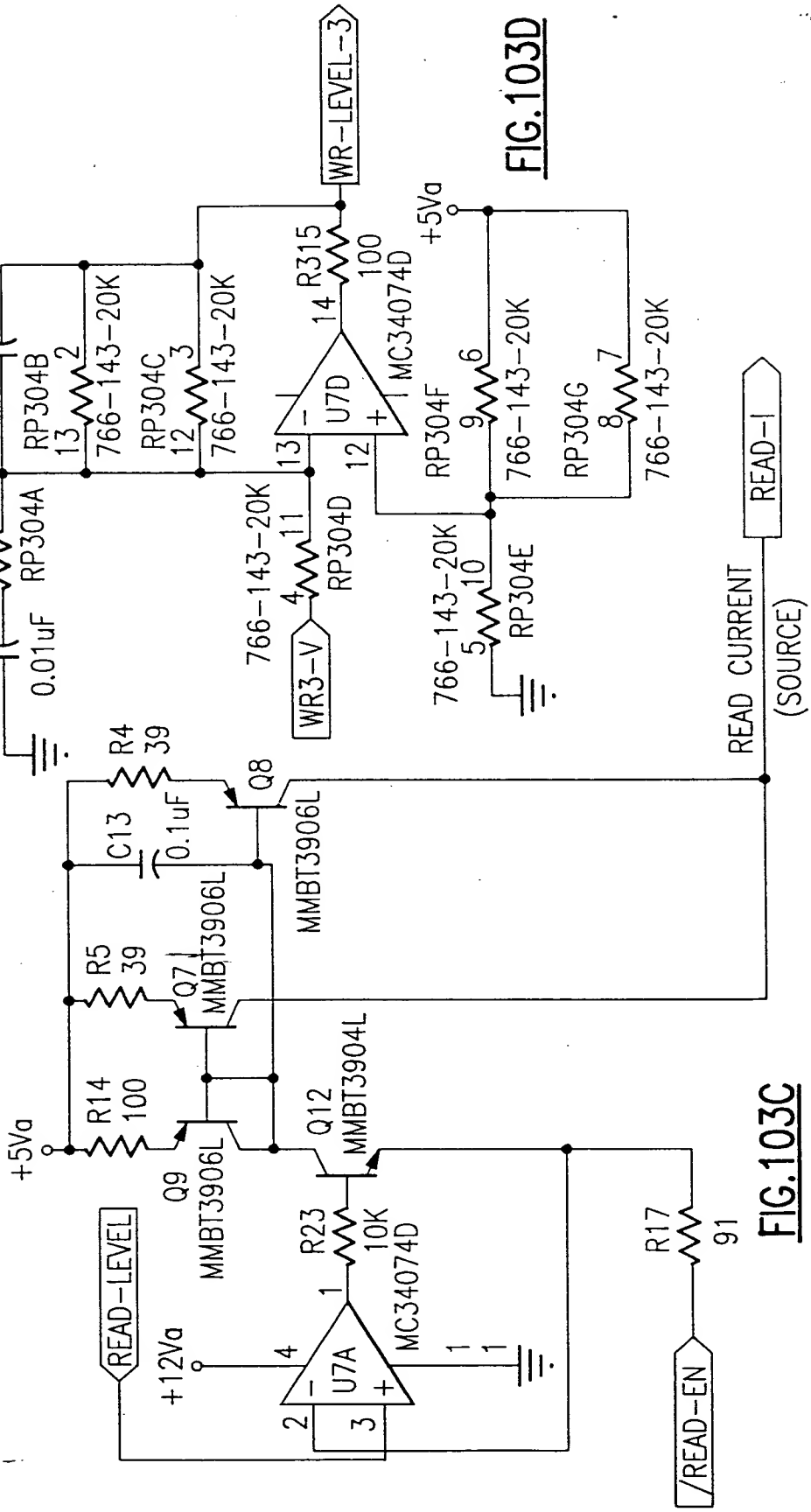


FIG.103D

FIG.103C

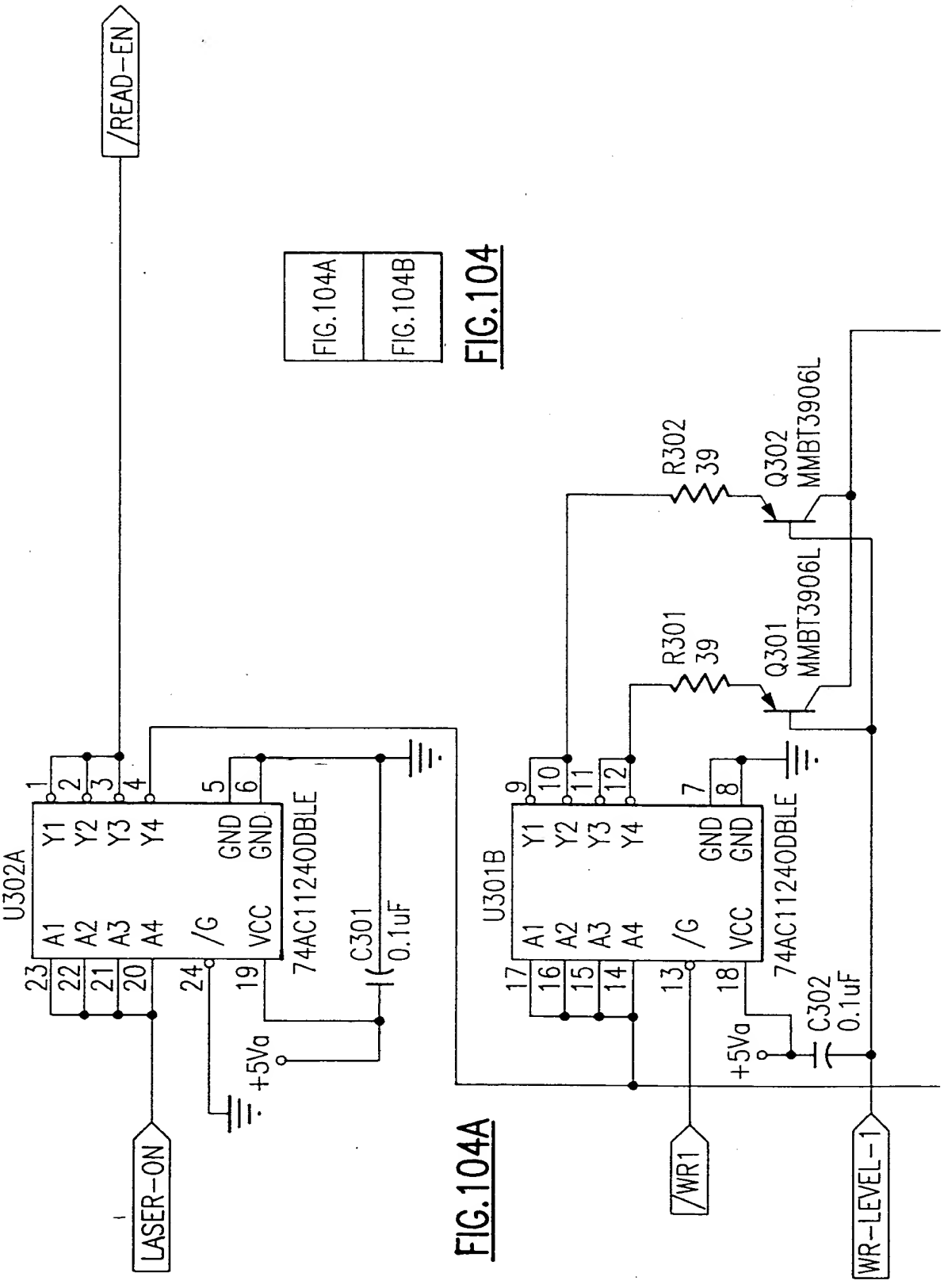


FIG.104A

FIG.104A
FIG.104B

FIG.104

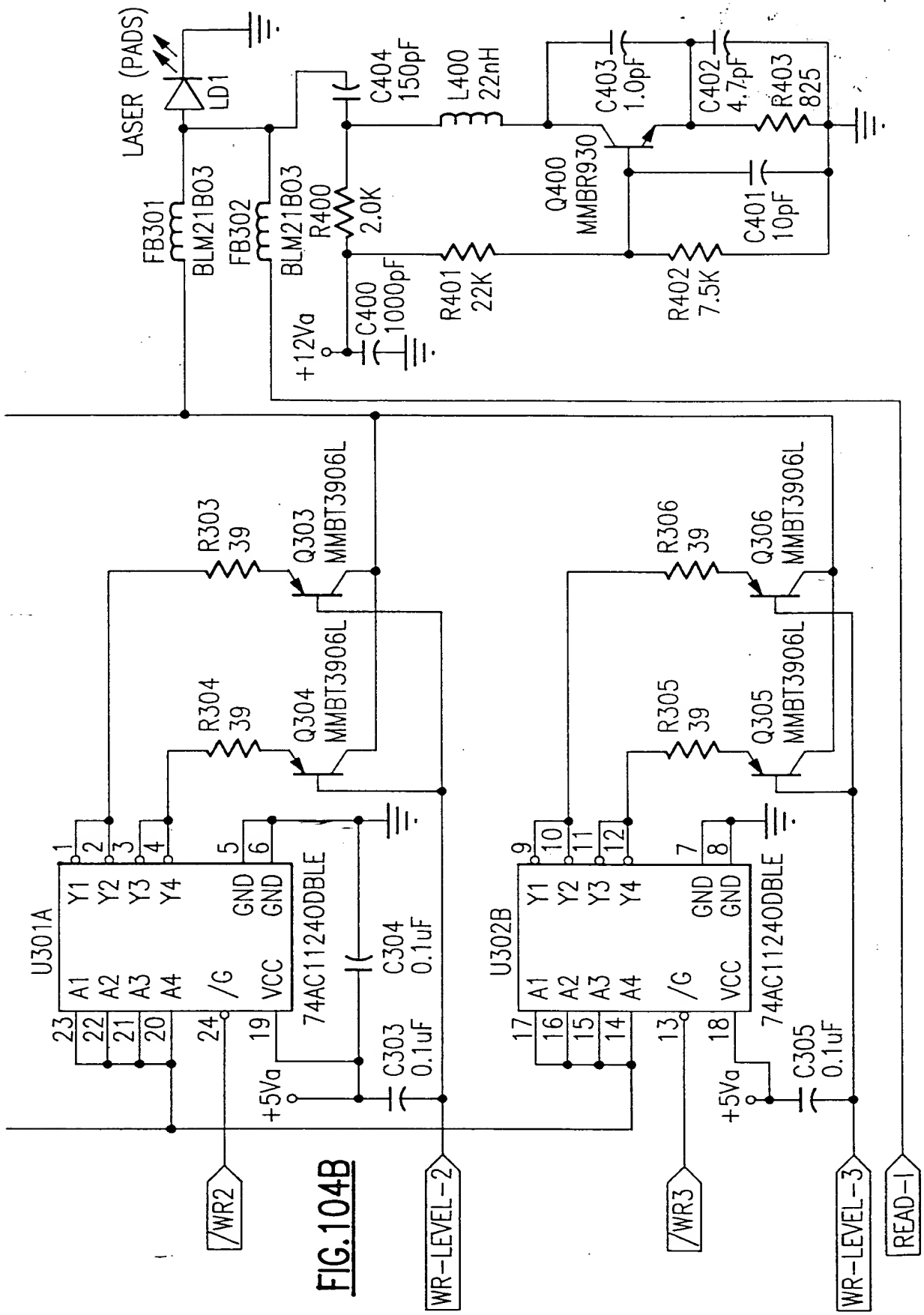

LASER (PADS)
LD1
FB301
BLM21B03
FB302
BLM21B03
R400
2.0K
C404
150pF
L400
22nH
C403
1.0pF
C402
4.7pF
R403
825
Q400
MMBR930
C401
10pF
C400
1000pF
+12Va
R401
22K
R402
7.5K
R303
39
Q303
MMBT3906L
R304
39
Q304
MMBT3906L
U301A
74AC11240DBLE
C303
0.1uF
C304
0.1uF
+5Va
/WR2
WR-LEVEL-2
R306
39
Q306
MMBT3906L
R305
39
Q305
MMBT3906L
U302B
74AC11240DBLE
C305
0.1uF
+5Va
/WR3
WR-LEVEL-3
READ-1

FIG.104B

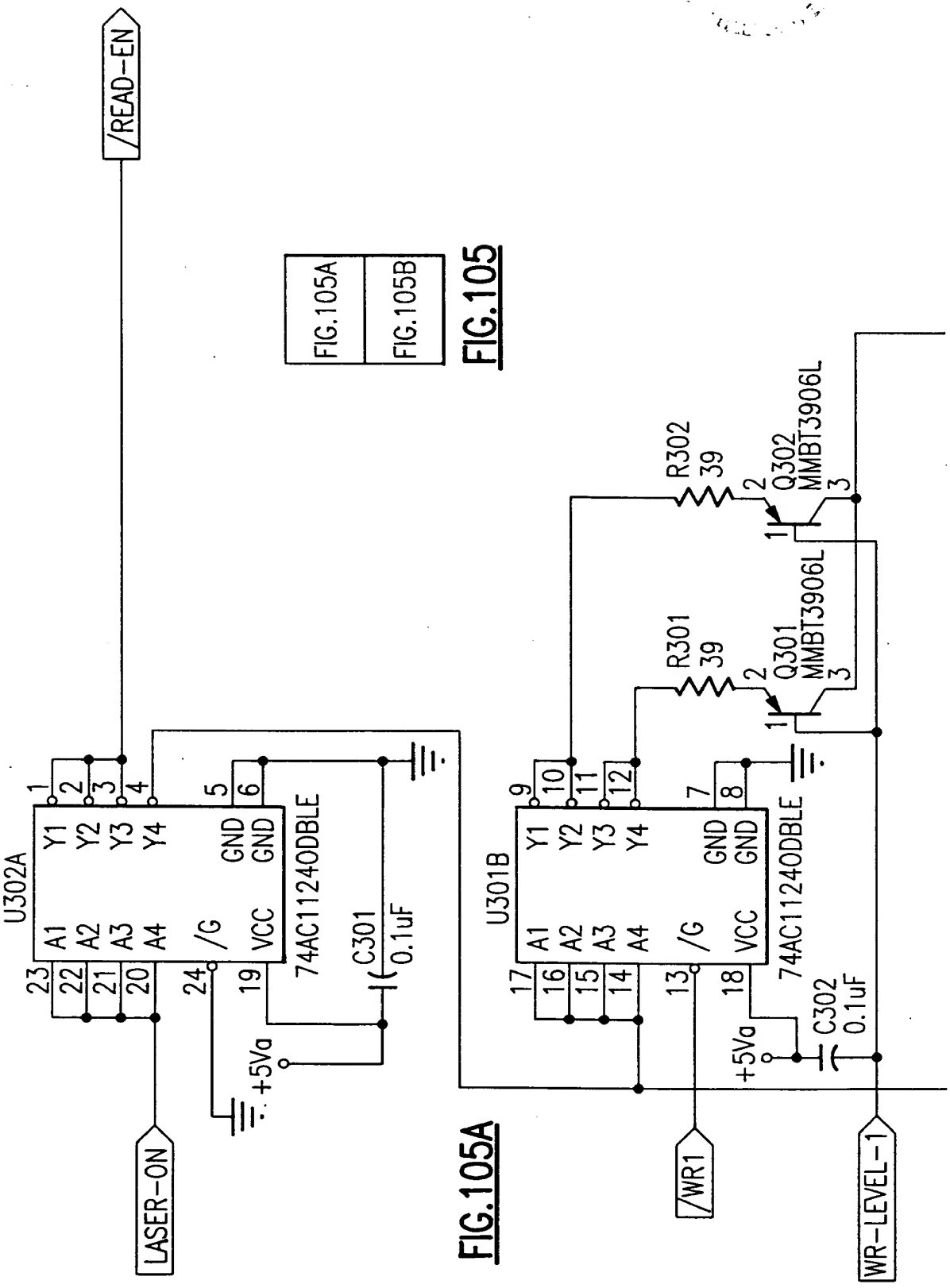


FIG.105A

FIG.105A
FIG.105B

FIG.105

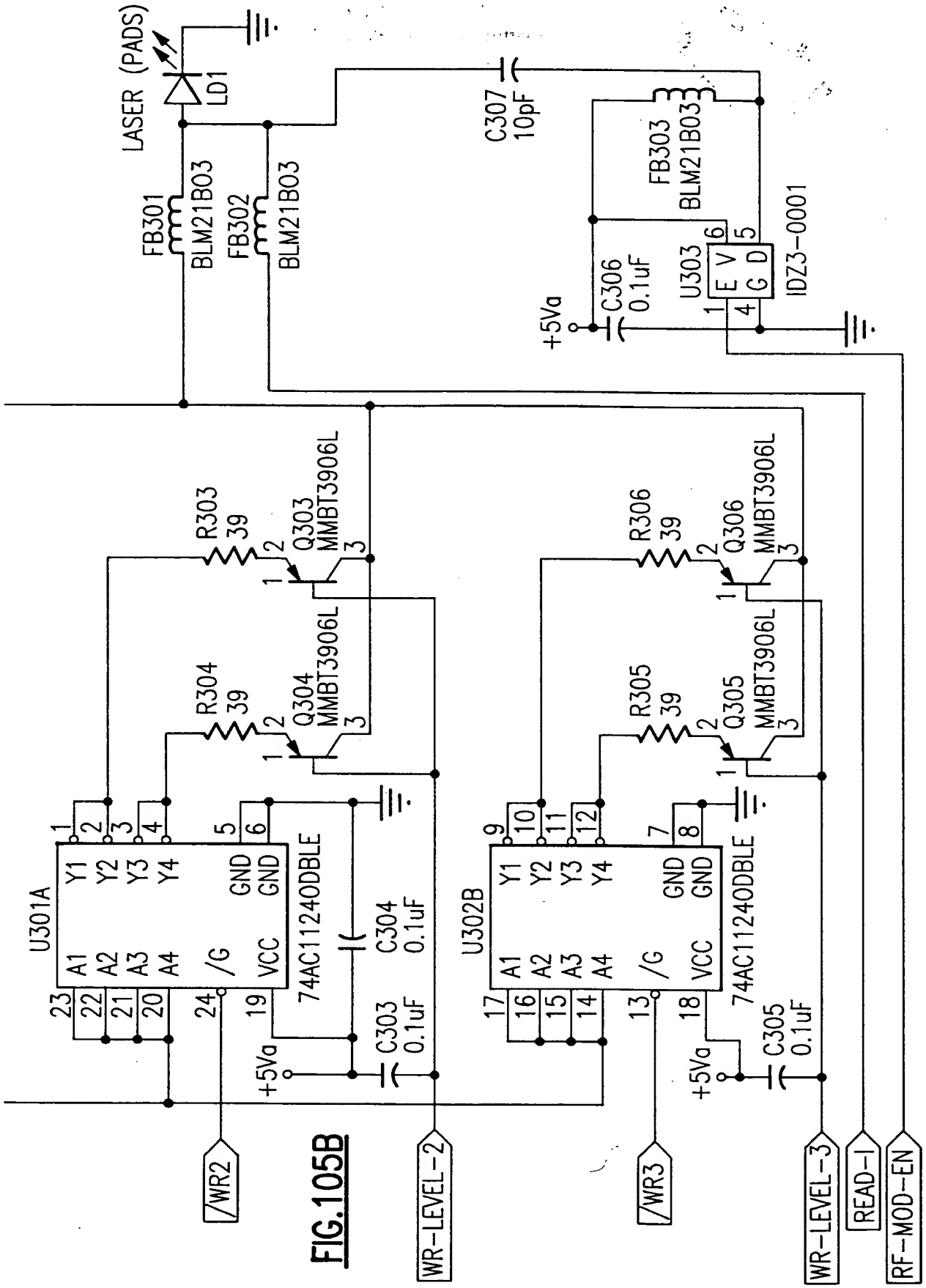

LASER (PADS)
LD1
FB301
BLM21B03
FB302
BLM21B03
C307
10pF
FB303
BLM21B03
+5Va
C306
0.1uF
U303
E V
G D
IDZ3-0001
R303
39
Q303
MMBT3906L
R304
39
Q304
MMBT3906L
U301A
74AC11240DBLE
C303
0.1uF
C304
0.1uF
/WR2
WR-LEVEL-2
R306
39
Q306
MMBT3906L
R305
39
Q305
MMBT3906L
U302B
74AC11240DBLE
C305
0.1uF
/WR3
WR-LEVEL-3
READ-I
RF-MOD-EN

FIG.105B

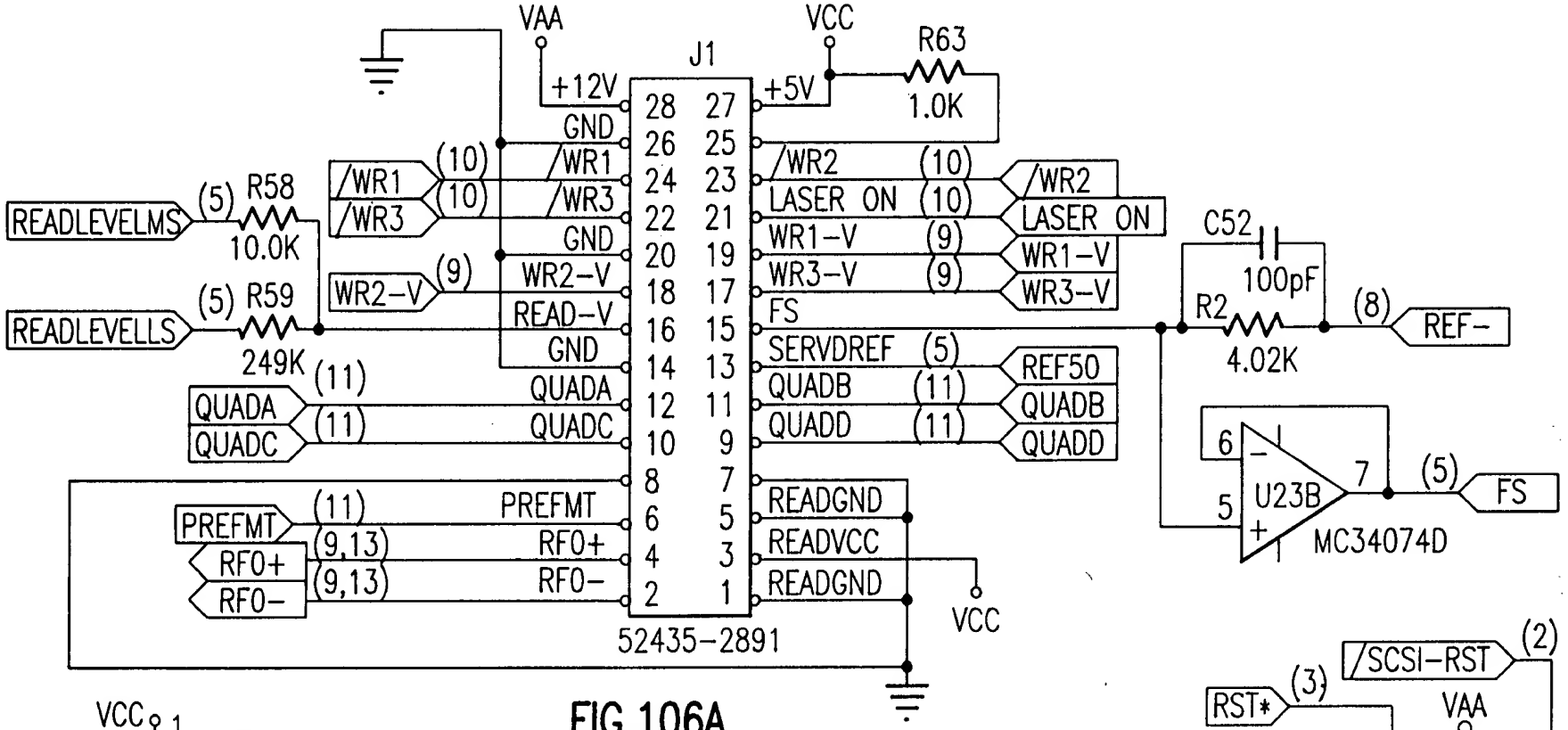


FIG.106A

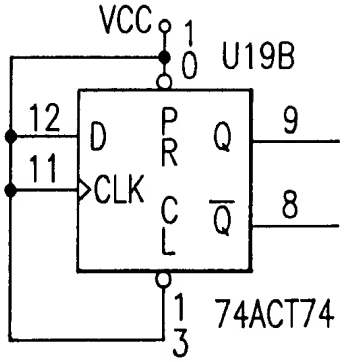


FIG.106C

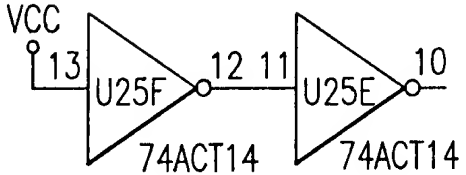


FIG.106D

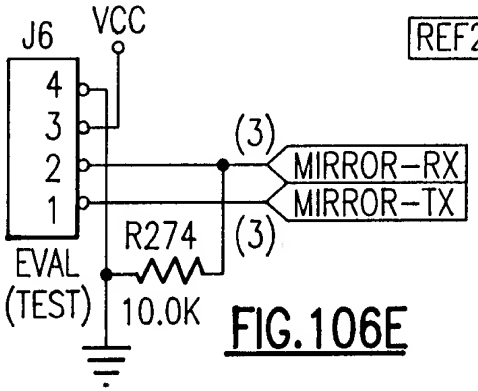


FIG.106E

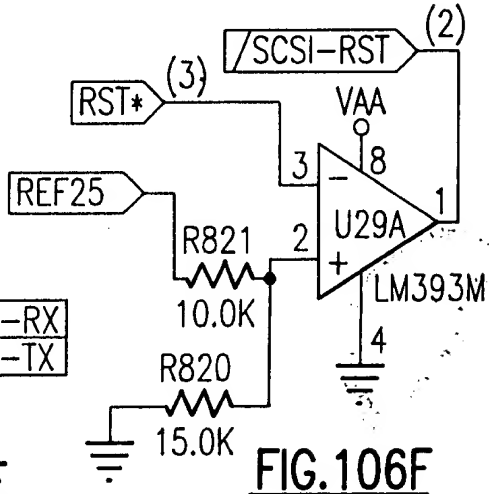


FIG.106F

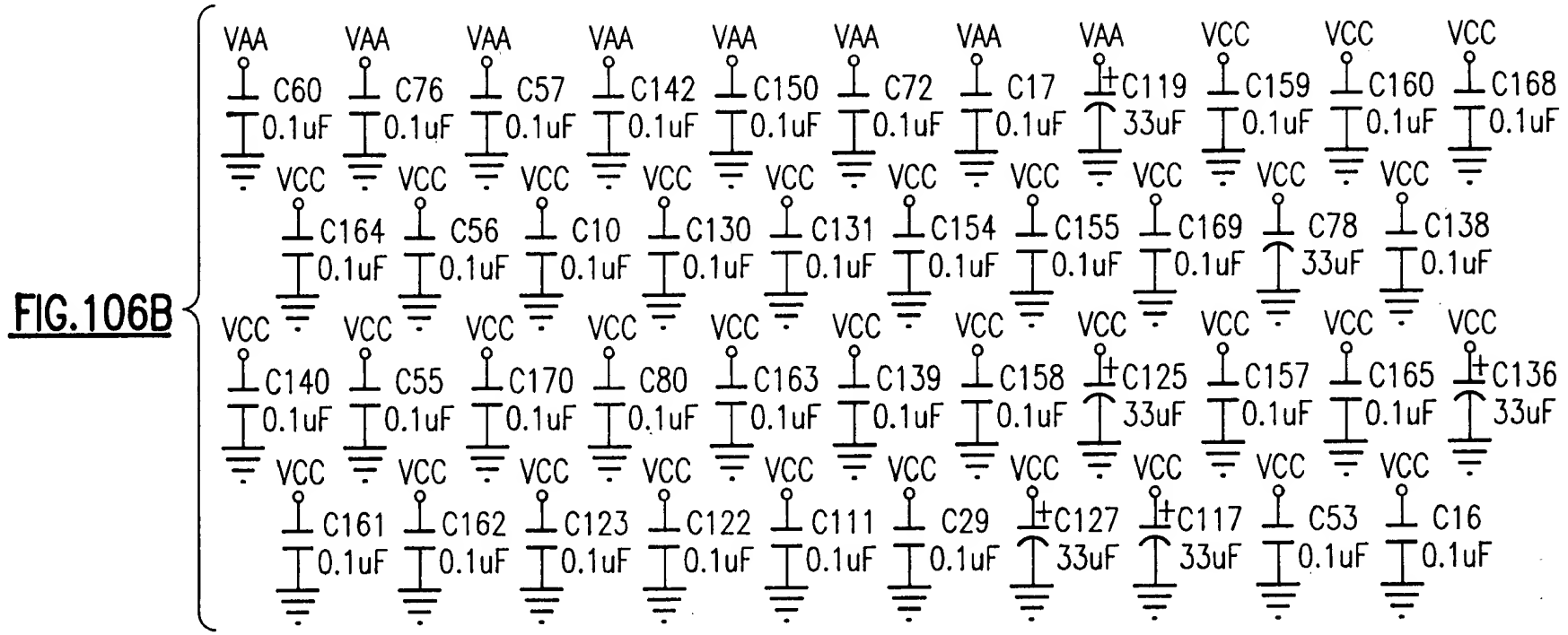


FIG.106B

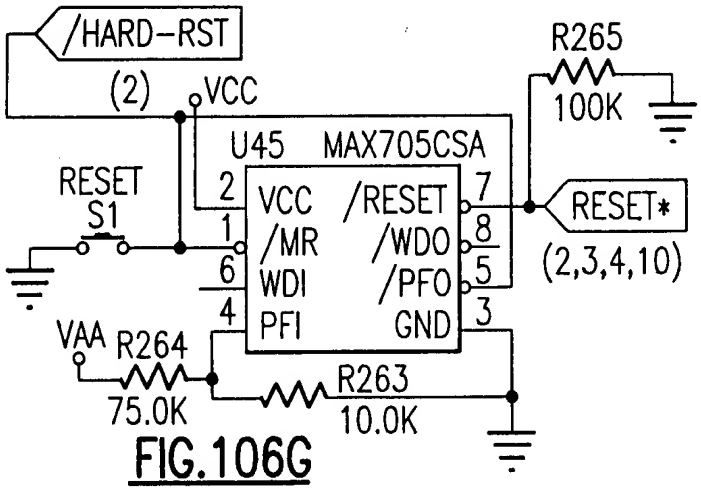


FIG.106G

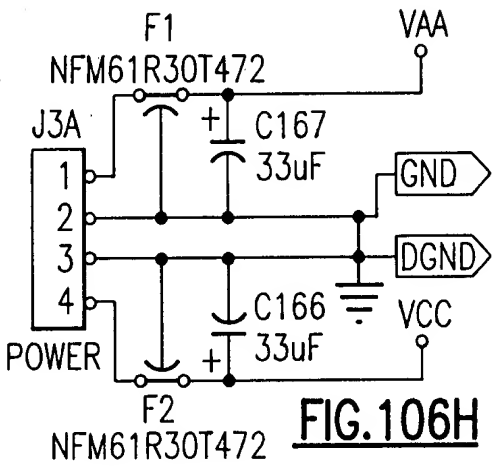


FIG.106H

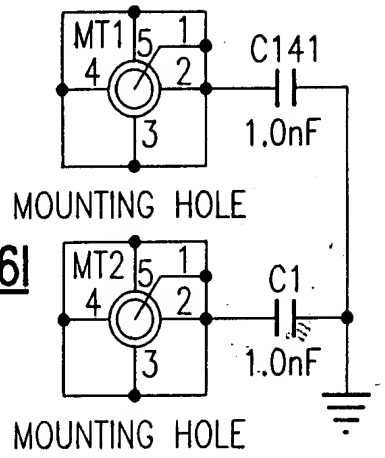


FIG.106I

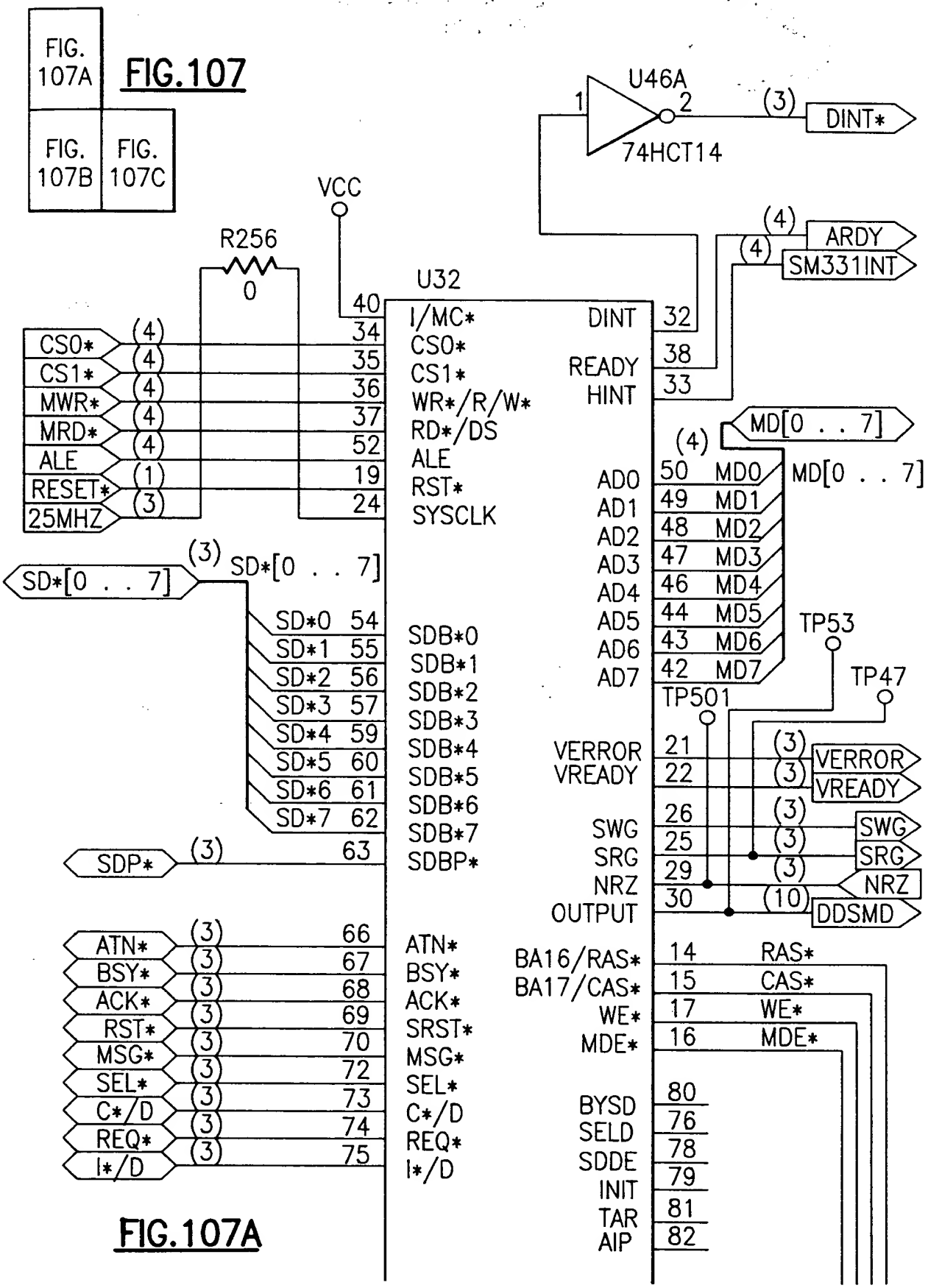
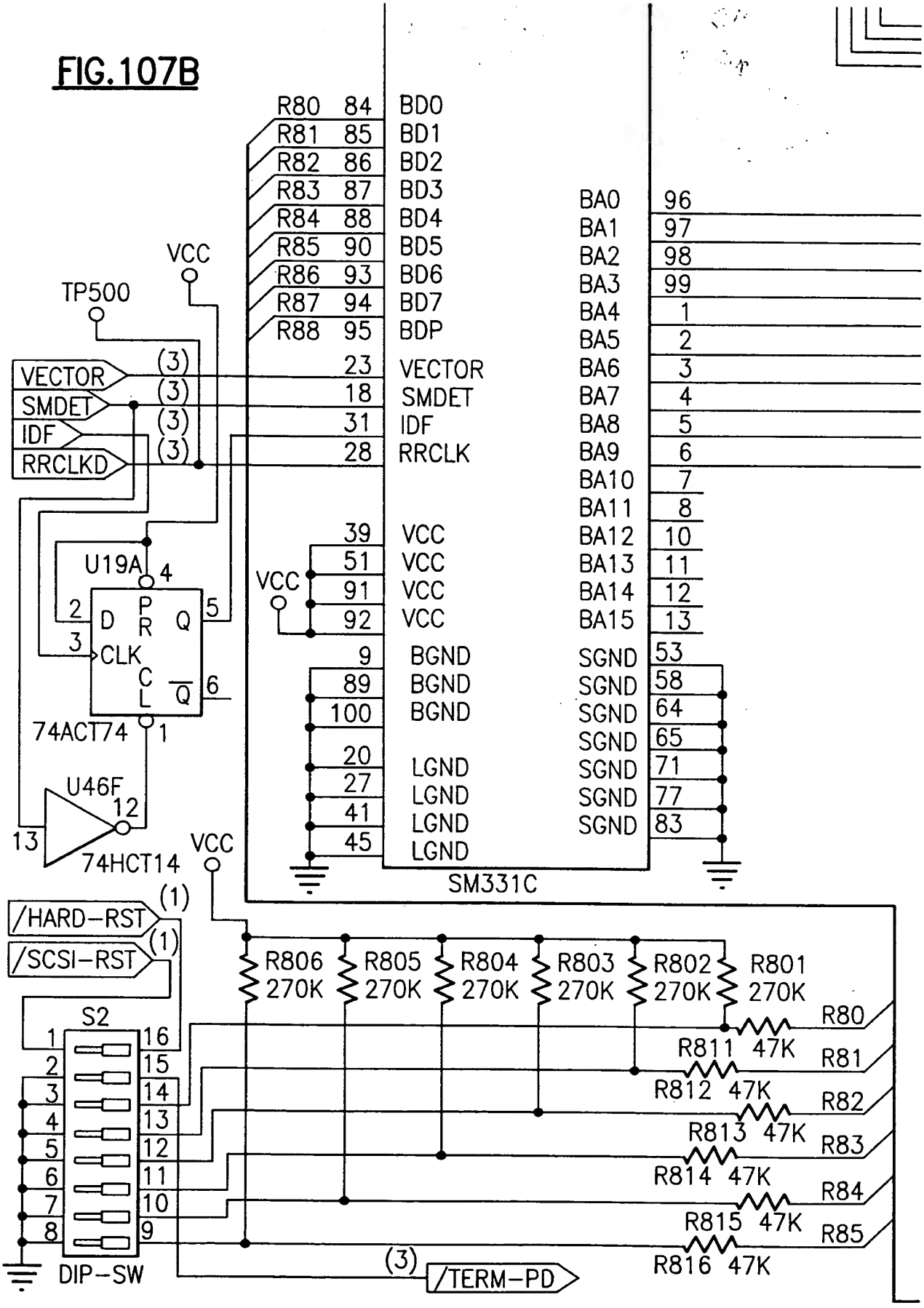


FIG.107

FIG.107A

FIG.107B


R80 84 BD0
R81 85 BD1
R82 86 BD2
R83 87 BD3
R84 88 BD4
R85 90 BD5
R86 93 BD6
R87 94 BD7
R88 95 BDP
23 VECTOR
18 SMDET
31 IDF
28 RRCLK
39 VCC
51 VCC
91 VCC
92 VCC
9 BGND
89 BGND
100 BGND
20 LGND
27 LGND
41 LGND
45 LGND
SM331C
BA0 96
BA1 97
BA2 98
BA3 99
BA4 1
BA5 2
BA6 3
BA7 4
BA8 5
BA9 6
BA10 7
BA11 8
BA12 10
BA13 11
BA14 12
BA15 13
SGND 53
SGND 58
SGND 64
SGND 65
SGND 71
SGND 77
SGND 83
VCC
TP500
VECTOR (3)
SMDET (3)
IDF (3)
RRCLKD (3)
U19A
74ACT74
U46F
74HCT14
/HARD-RST (1)
/SCSI-RST (1)
S2
DIP-SW
R806 270K
R805 270K
R804 270K
R803 270K
R802 270K
R801 270K
R811 47K
R812 47K
R813 47K
R814 47K
R815 47K
R816 47K
R80
R81
R82
R83
R84
R85
(3) /TERM-PD

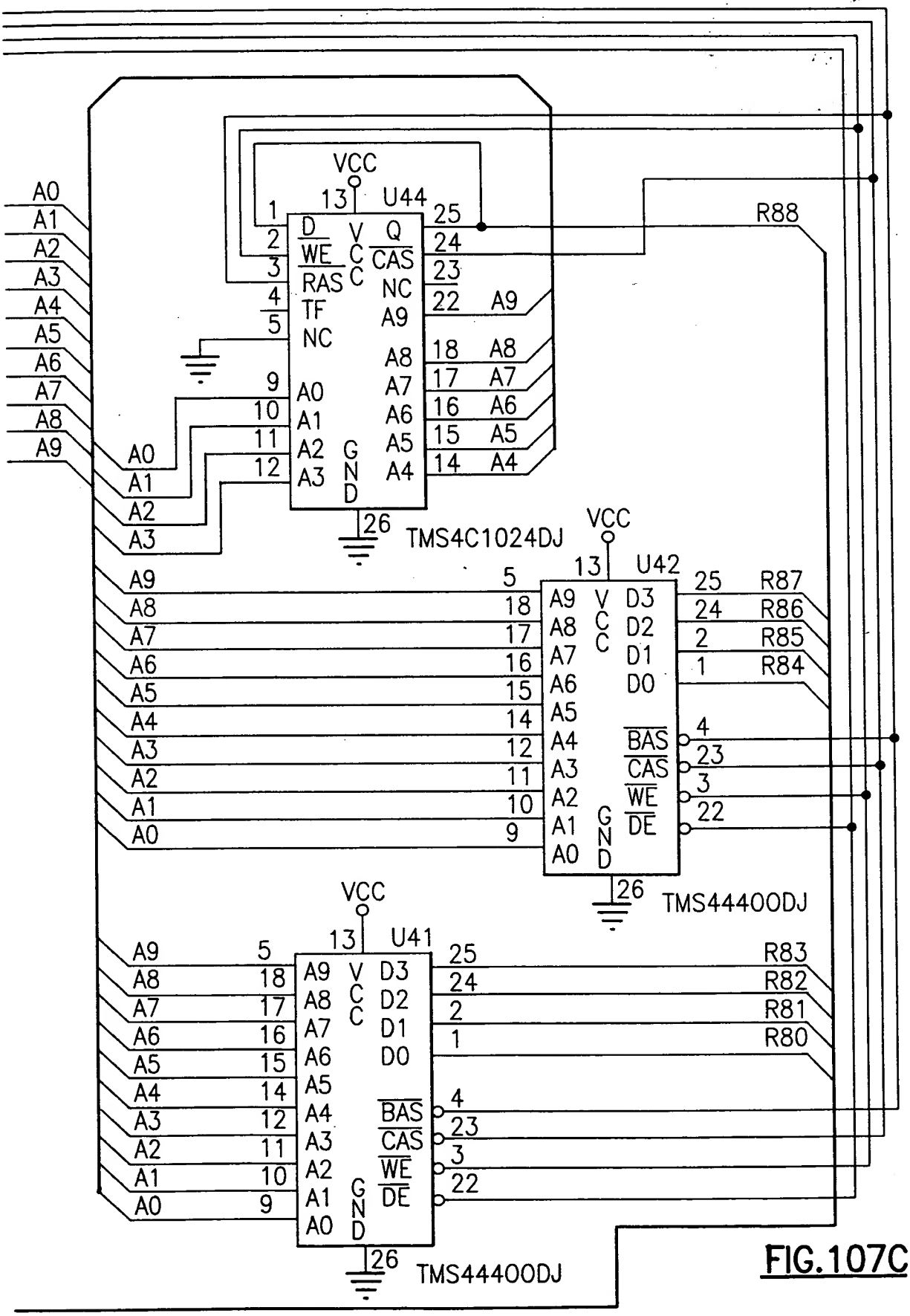

VCC
U44
TMS4C1024DJ
U42
TMS44400DJ
U41
TMS44400DJ
R88
R87
R86
R85
R84
R83
R82
R81
R80
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
D
WE
RAS
TF
NC
Q
CAS
NC
A9
A8
A7
A6
A5
A4
GND
VCC
BAS
CAS
WE
DE
D3
D2
D1
D0

FIG.107C

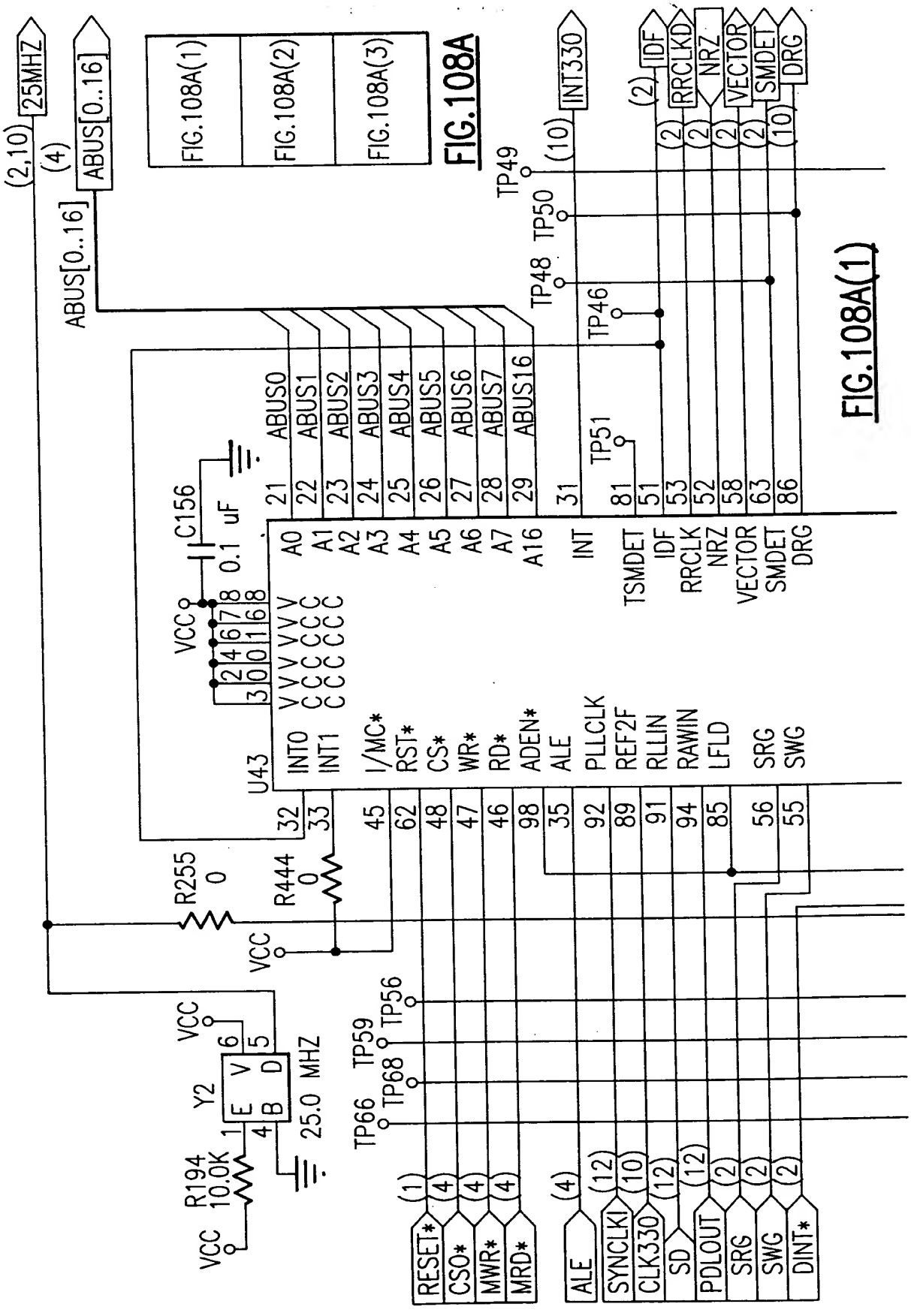
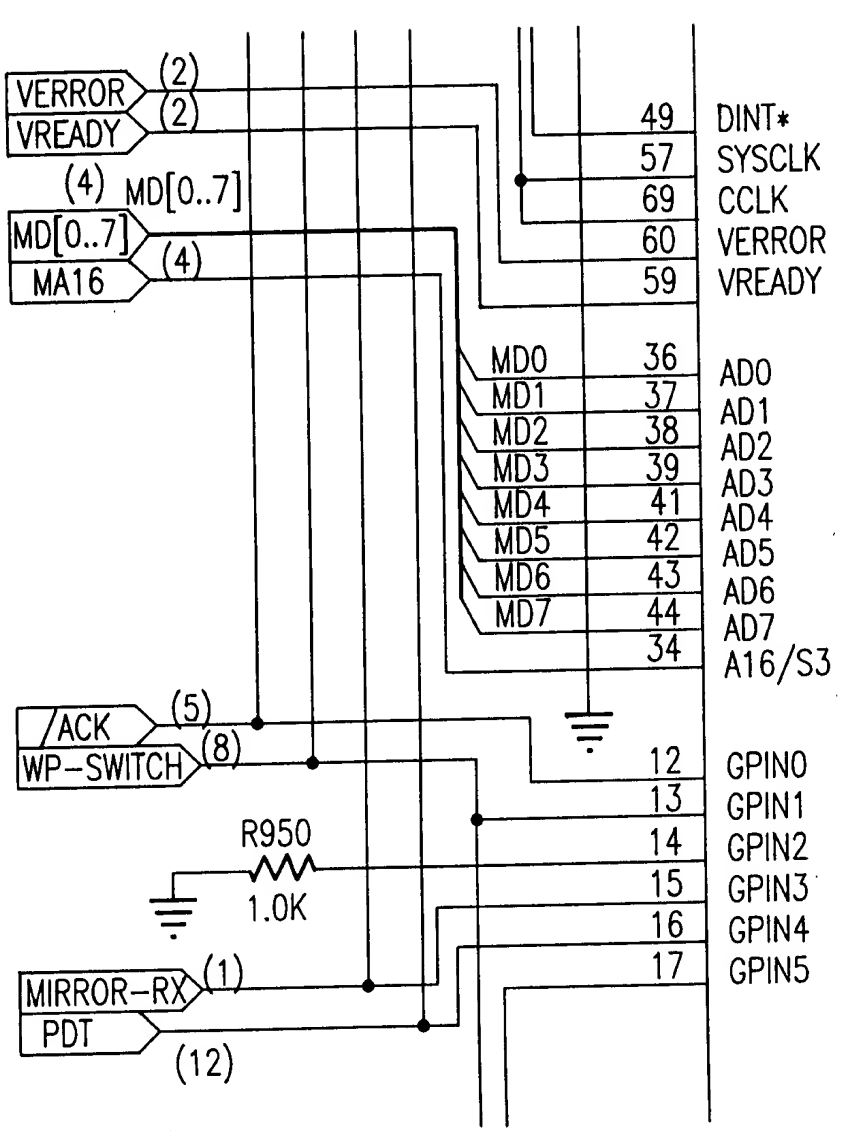


FIG.108A(1)
FIG.108A(2)
FIG.108A(3)
FIG.108A
FIG.108A(1)
(2,10) 25MHZ
(4) ABUS[0..16]
ABUS[0..16]
U43
INT0
INT1
A0
A1
A2
A3
A4
A5
A6
A7
A16
INT
TSMDET
IDF
RRCLK
NRZ
VECTOR
SMDET
DRG
ABUS0
ABUS1
ABUS2
ABUS3
ABUS4
ABUS5
ABUS6
ABUS7
ABUS16
C156 0.1 uF
R255 0
R444 0
R194 10.0K
Y2 25.0 MHZ
I/MC*
RST*
CS*
WR*
RD*
ADEN*
ALE
PLLCLK
REF2F
RLLIN
RAWIN
LFLD
SRG
SWG
RESET*
CSO*
MWR*
MRD*
SYNCLKI
CLK330
SD
PDLOUT
SRG
SWG
DINT*
TP48
TP49
TP50
TP46
TP51
TP56
TP59
TP68
TP66
INT330
IDF
RRCLKD
NRZ
VECTOR
SMDET
DRG
VCC


VERROR
(2)
VREADY
(2)
(4) MD[0..7]
MD[0..7]
MA16
(4)
/ACK
(5)
WP-SWITCH
(8)
R950
1.0K
MIRROR-RX
(1)
PDT
(12)
49 DINT*
57 SYSCLK
69 CCLK
60 VERROR
59 VREADY
MD0 36 AD0
MD1 37 AD1
MD2 38 AD2
MD3 39 AD3
MD4 41 AD4
MD5 42 AD5
MD6 43 AD6
MD7 44 AD7
34 A16/S3
12 GPIN0
13 GPIN1
14 GPIN2
15 GPIN3
16 GPIN4
17 GPIN5

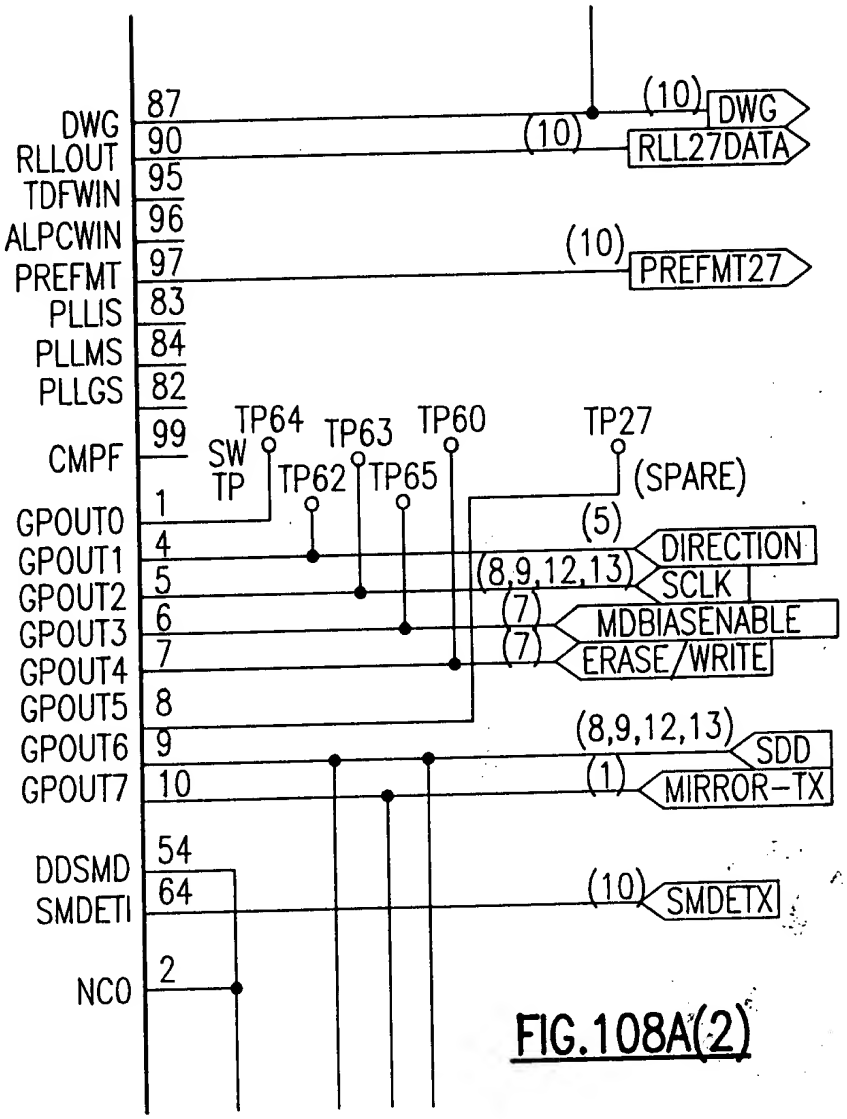

DWG 87
RLLOUT 90
TDFWIN 95
ALPCWIN 96
PREFMT 97
PLLIS 83
PLLMS 84
PLLGS 82
CMPF 99
GPOUT0 1
GPOUT1 4
GPOUT2 5
GPOUT3 6
GPOUT4 7
GPOUT5 8
GPOUT6 9
GPOUT7 10
DDSMD 54
SMDETI 64
NC0 2
TP64
SW TP
TP62
TP63
TP65
TP60
TP27
(SPARE)
(10) DWG
(10) RLL27DATA
(10) PREFMT27
(5) DIRECTION
(8,9,12,13) SCLK
(7) MDBIASENABLE
(7) ERASE/WRITE
(8,9,12,13) SDD
(1) MIRROR-TX
(10) SMDETX

FIG.108A(2)

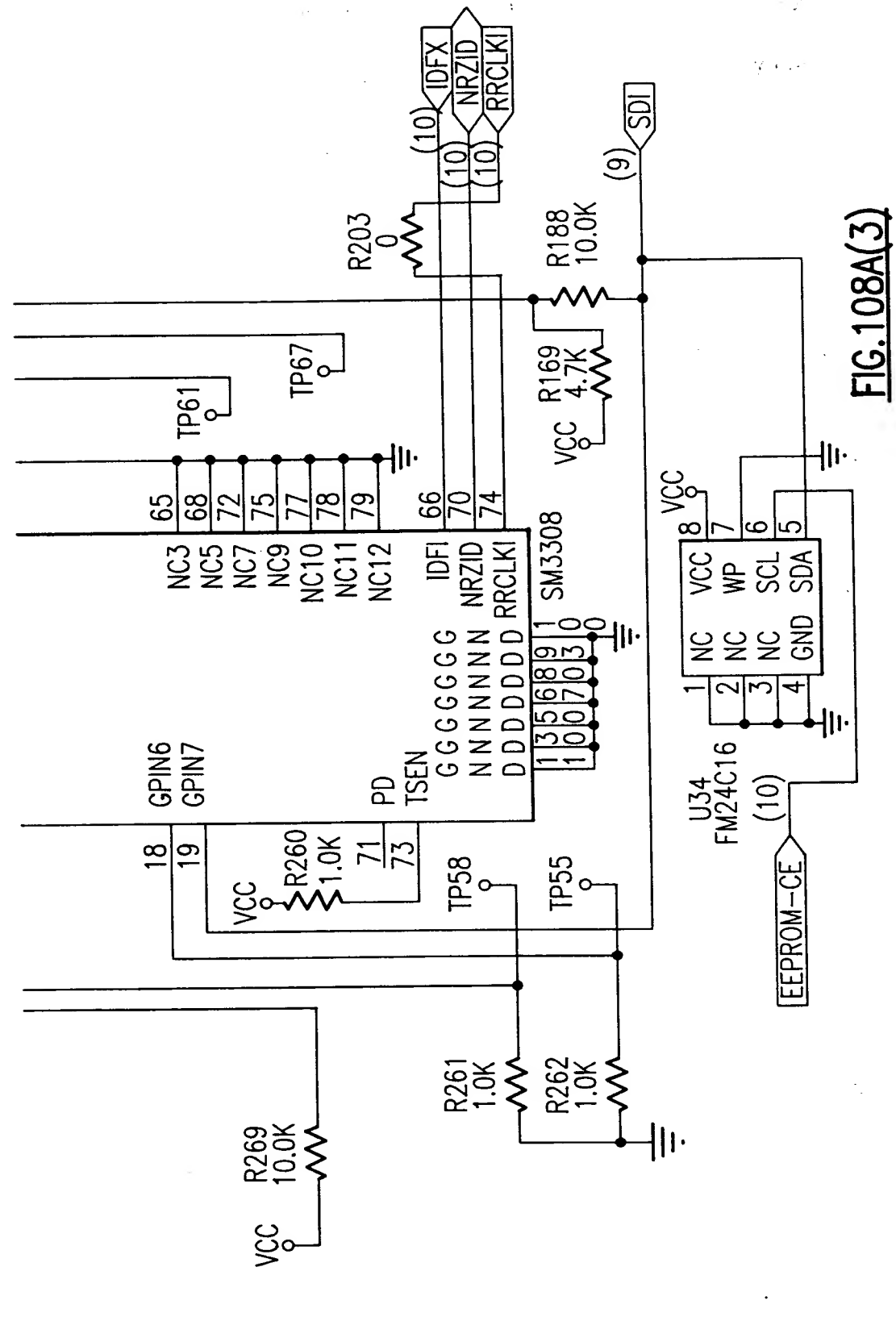

IDFX
NRZID
RRCLKI
(10)
(10)
(10)
SDI
(9)
R203
0
R188
10.0K
R169
4.7K
VCC
TP67
TP61
65
68
72
75
77
78
79
66
70
74
NC3
NC5
NC7
NC9
NC10
NC11
NC12
IDFI
NRZID
RRCLKI
SM3308
GGGGGGG
NNNNNNN
DDDDDDD
1 3 5 6 8 9 1
1 0 0 7 0 3 0
VCC
8
7
6
5
NC
NC
NC
GND
VCC
WP
SCL
SDA
1
2
3
4
U34
FM24C16
(10)
EEPROM-CE
GPIN6
GPIN7
18
19
PD
TSEN
71
73
R260
1.0K
VCC
TP58
TP55
R261
1.0K
R262
1.0K
R269
10.0K
VCC

FIG.108A(3)

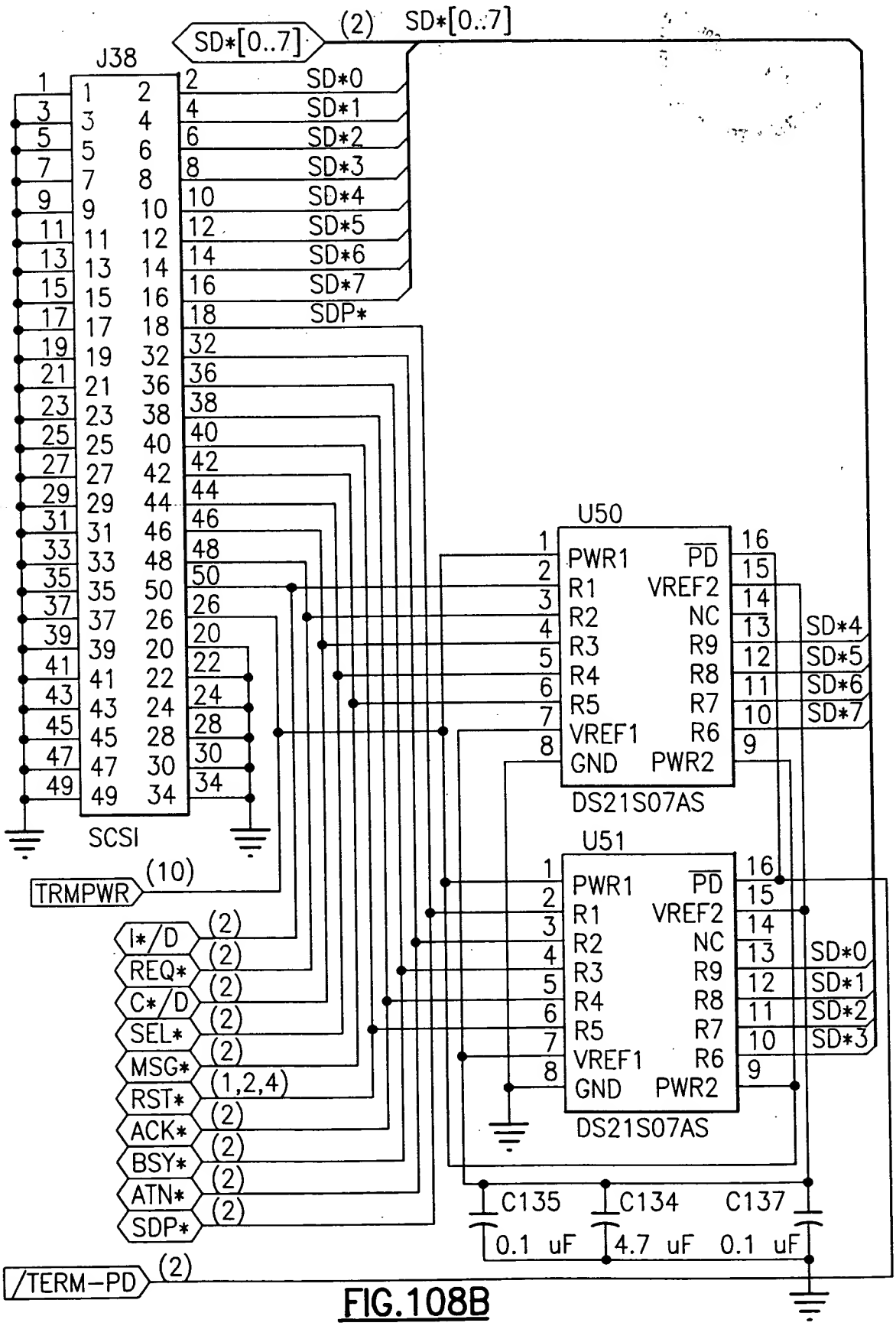

SD*[0..7]
(2) SD*[0..7]
J38
SD*0
SD*1
SD*2
SD*3
SD*4
SD*5
SD*6
SD*7
SDP*
SCSI
U50
PWR1
R1
R2
R3
R4
R5
VREF1
GND
PD
VREF2
NC
R9
R8
R7
R6
PWR2
DS21S07AS
U51
DS21S07AS
TRMPWR
(10)
I*/D
REQ*
C*/D
SEL*
MSG*
RST*
ACK*
BSY*
ATN*
SDP*
(1,2,4)
C135
C134
C137
0.1 uF
4.7 uF
0.1 uF
/TERM-PD

FIG.108B

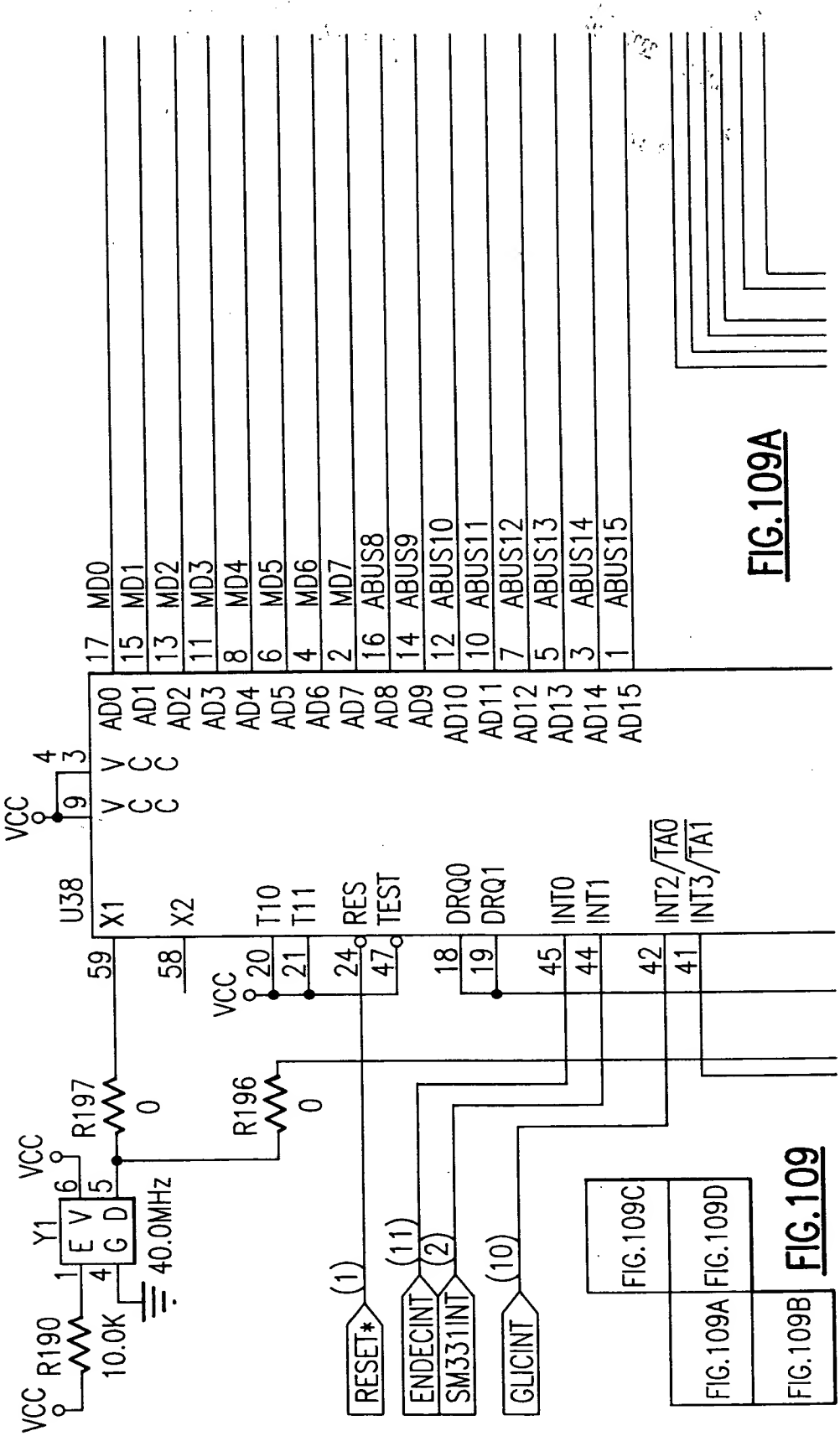


FIG.109A

FIG.109

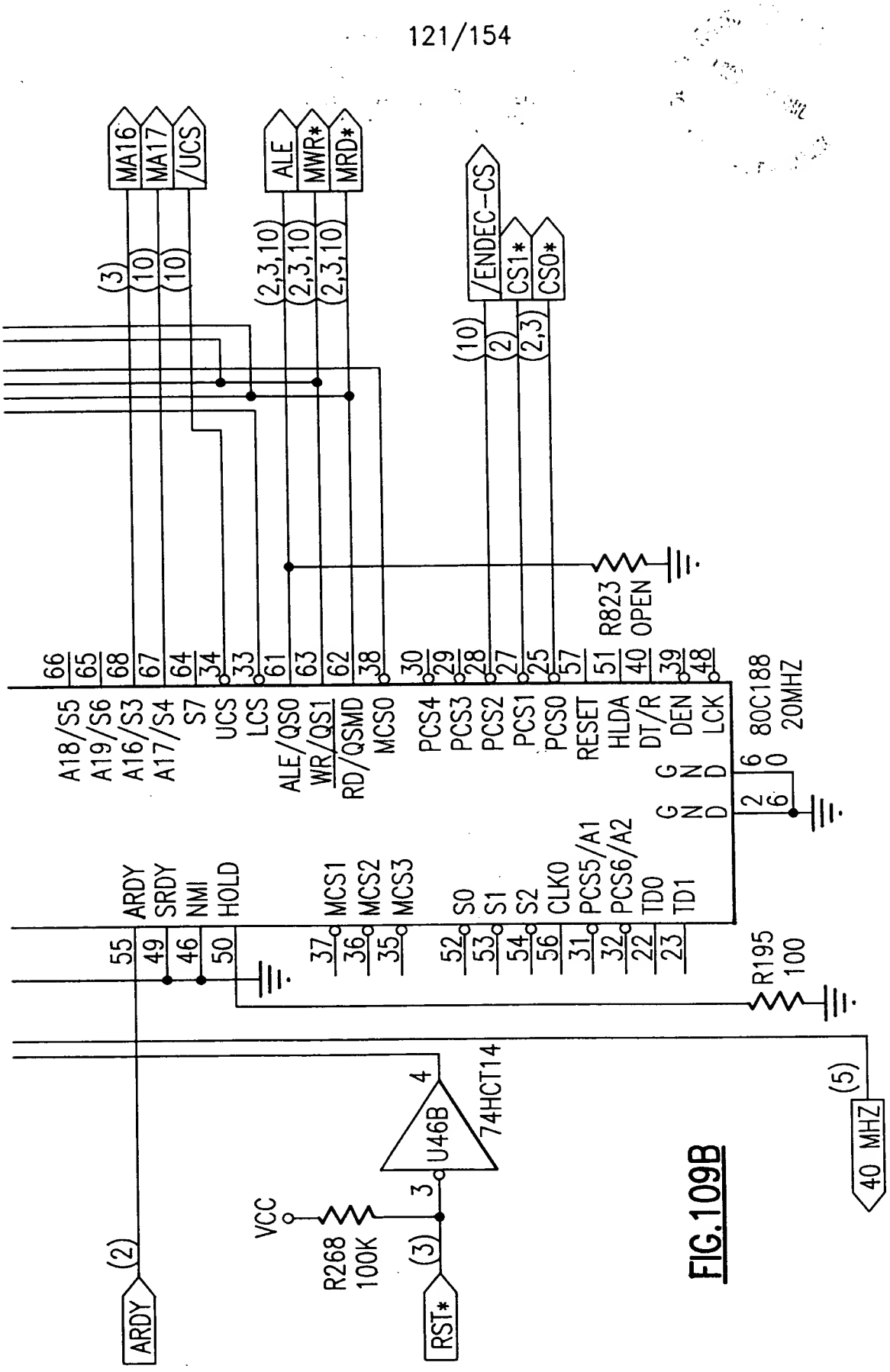

MA16
MA17
/UCS
ALE
MWR*
MRD*
/ENDEC-CS
CS1*
CS0*
(3)
(10)
(10)
(2,3,10)
(2,3,10)
(2,3,10)
(10)
(2)
(2,3)
A18/S5
A19/S6
A16/S3
A17/S4
S7
UCS
LCS
ALE/QS0
WR/QS1
RD/QSMD
MCS0
PCS4
PCS3
PCS2
PCS1
PCS0
RESET
HLDA
DT/R
DEN
LCK
GND
GND
80C188
20MHZ
R823
OPEN
R195
100
ARDY
SRDY
NMI
HOLD
MCS1
MCS2
MCS3
S0
S1
S2
CLK0
PCS5/A1
PCS6/A2
TD0
TD1
U46B
74HCT14
VCC
R268
100K
(2)
(3)
(5)
ARDY
RST*
40 MHZ

FIG.109B

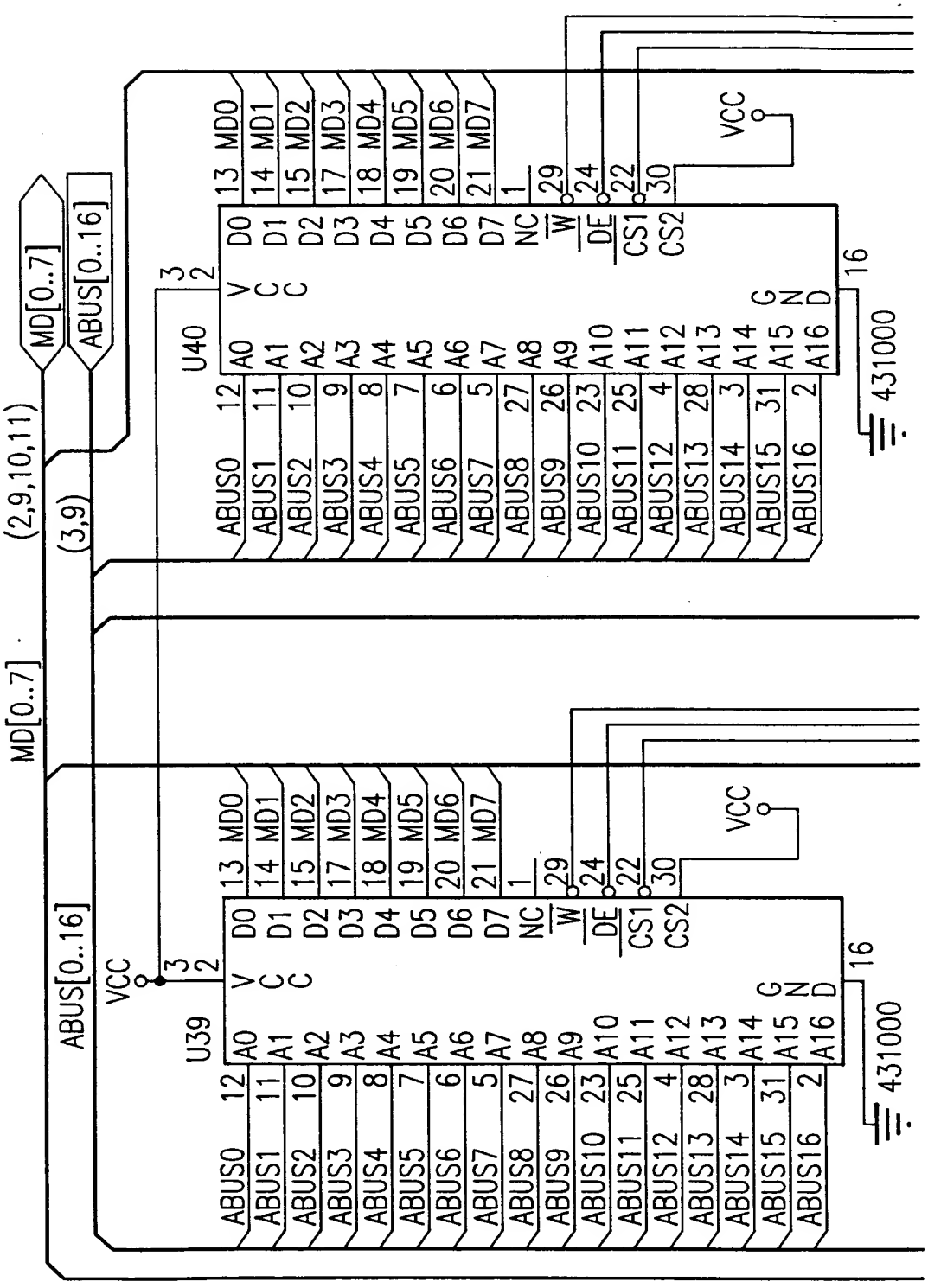

MD[0..7]
ABUS[0..16]
(2,9,10,11)
(3,9)
U40
U39
VCC
431000
ABUS0
ABUS1
ABUS2
ABUS3
ABUS4
ABUS5
ABUS6
ABUS7
ABUS8
ABUS9
ABUS10
ABUS11
ABUS12
ABUS13
ABUS14
ABUS15
ABUS16
MD0
MD1
MD2
MD3
MD4
MD5
MD6
MD7

FIG.109C

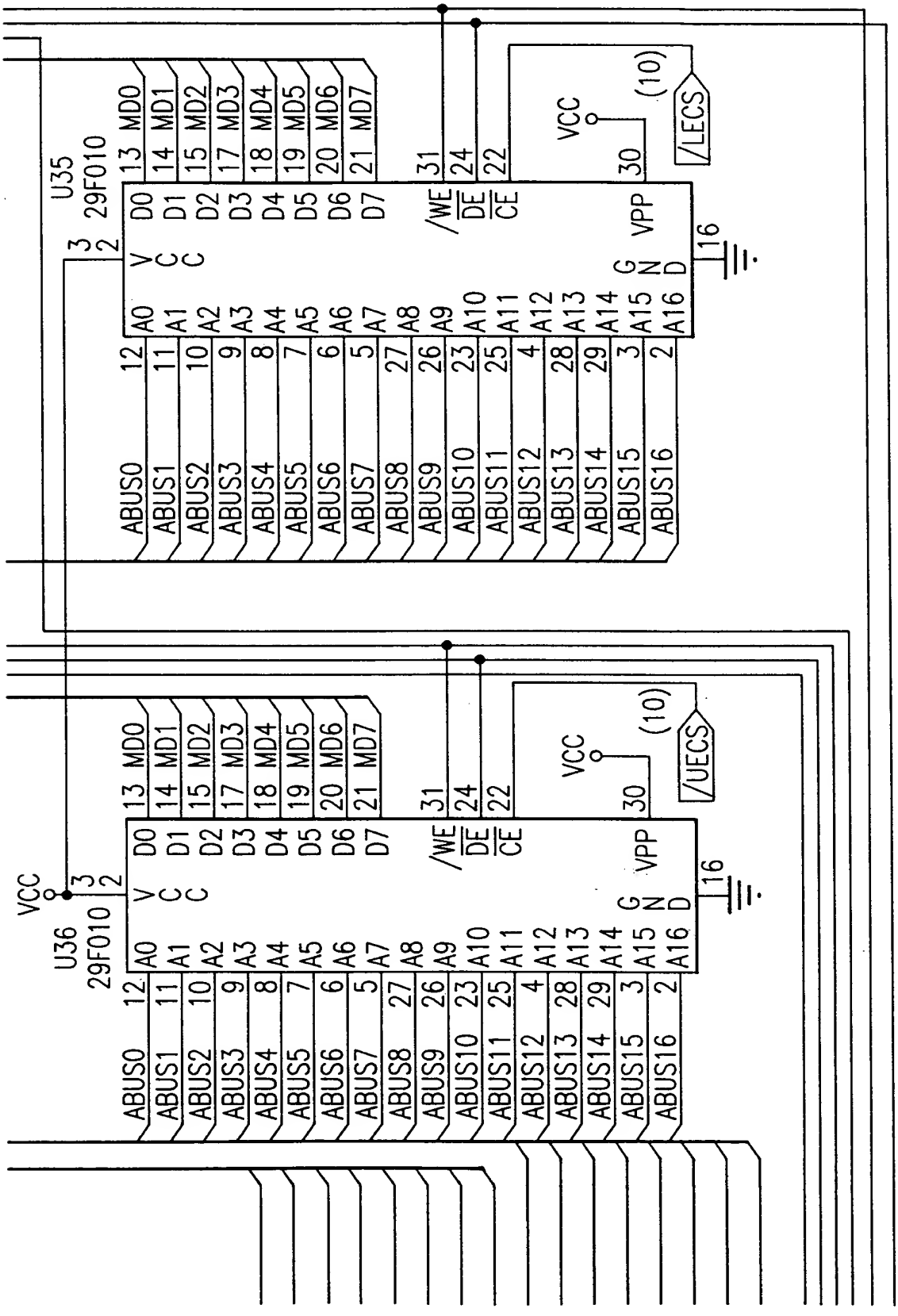

U35
29F010
U36
29F010
VCC
/WE
/OE
/CE
VPP
GND
MD0
MD1
MD2
MD3
MD4
MD5
MD6
MD7
ABUS0
ABUS1
ABUS2
ABUS3
ABUS4
ABUS5
ABUS6
ABUS7
ABUS8
ABUS9
ABUS10
ABUS11
ABUS12
ABUS13
ABUS14
ABUS15
ABUS16
/LECS
/UECS
(10)

FIG.109D

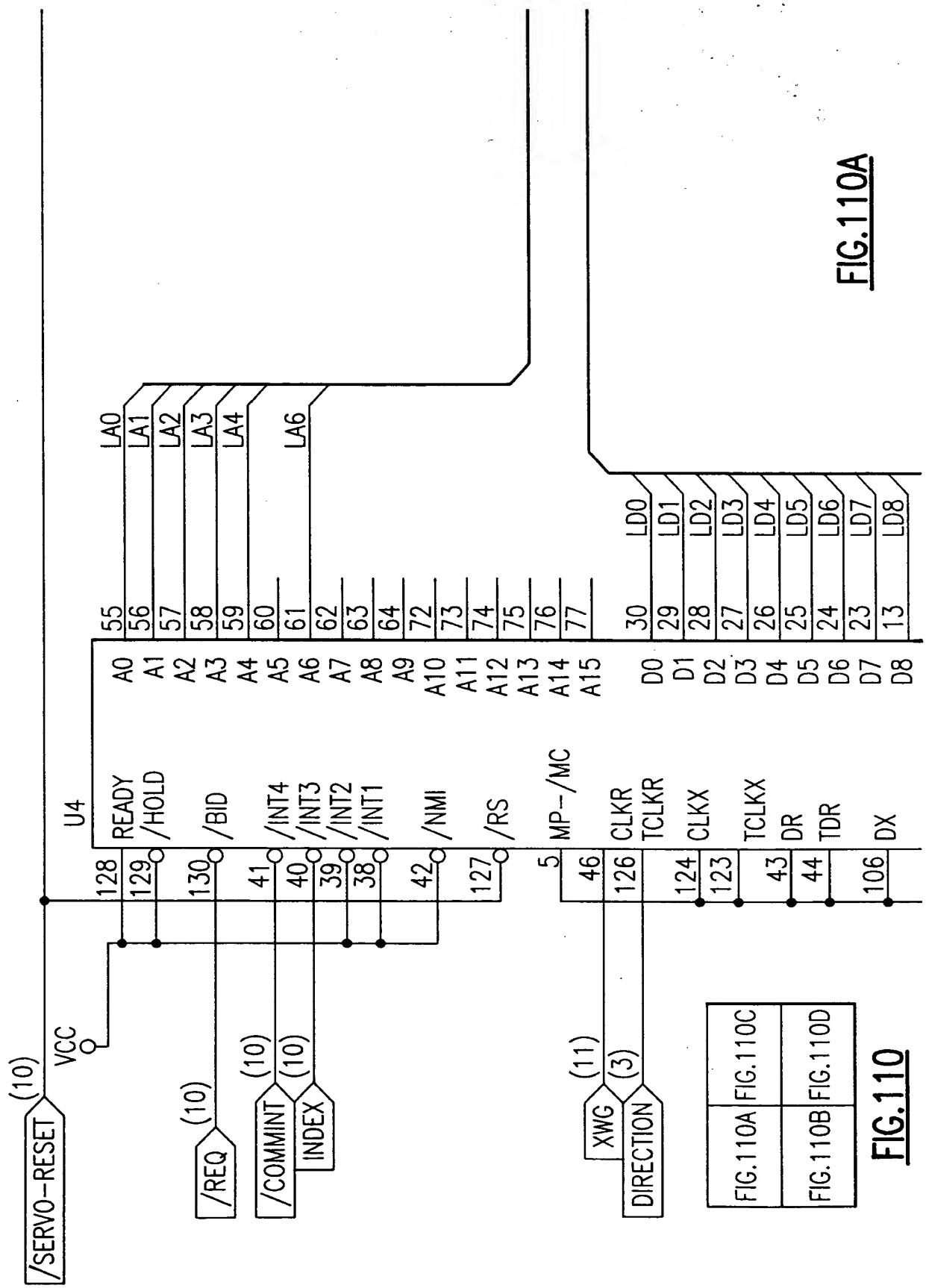

/SERVO-RESET
(10)
VCC
U4
READY
/HOLD
/BID
/INT4
/INT3
/INT2
/INT1
/NMI
/RS
MP-/MC
CLKR
TCLKR
CLKX
TCLKX
DR
TDR
DX
128
129
130
41
40
39
38
42
127
5
46
126
124
123
43
44
106
(10)
/REQ
(10)
/COMMINT
(10)
INDEX
(11)
XWG
(3)
DIRECTION
LA0
LA1
LA2
LA3
LA4
LA6
55
56
57
58
59
60
61
62
63
64
72
73
74
75
76
77
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
A14
A15
LD0
LD1
LD2
LD3
LD4
LD5
LD6
LD7
LD8
30
29
28
27
26
25
24
23
13
D0
D1
D2
D3
D4
D5
D6
D7
D8
FIG.110A
FIG.110C
FIG.110B
FIG.110D

FIG.110

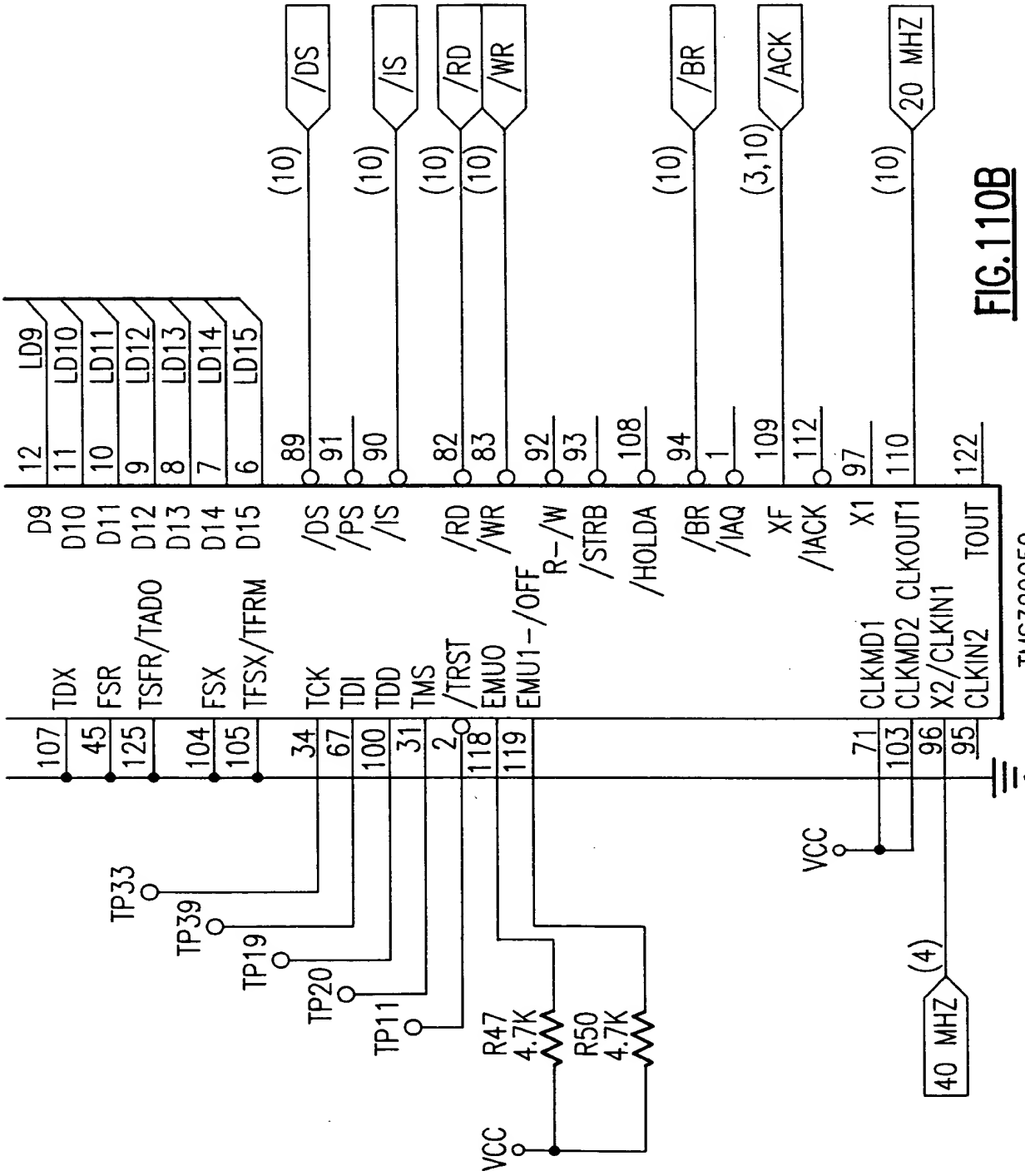

TMS320C50
D9
D10
D11
D12
D13
D14
D15
/DS
/PS
/IS
/RD
/WR
R-/W
/STRB
/HOLDA
/BR
/IAQ
XF
/IACK
X1
CLKMD1
CLKMD2
X2/CLKIN1
CLKIN2
CLKOUT1
TOUT
TDX
FSR
TSFR/TADO
FSX
TFSX/TFRM
TCK
TDI
TDD
TMS
/TRST
EMU0
EMU1-/OFF
LD9
LD10
LD11
LD12
LD13
LD14
LD15
/DS
/IS
/RD
/WR
/BR
/ACK
20 MHZ
40 MHZ
TP33
TP39
TP19
TP20
TP11
R47 4.7K
R50 4.7K
VCC
VCC

FIG.110B

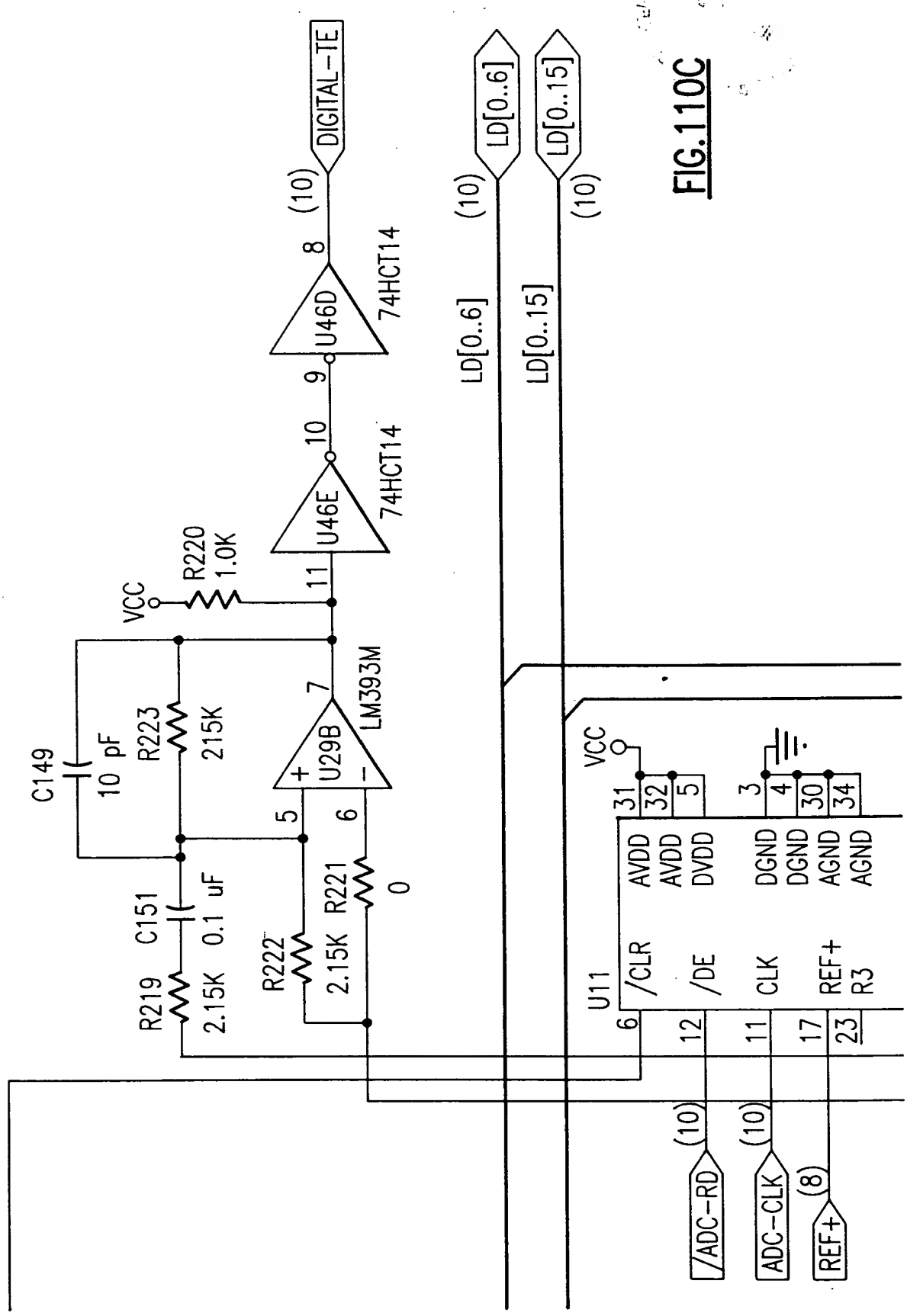

DIGITAL-TE
(10)
8
U46D
74HCT14
9
10
U46E
74HCT14
11
R220
1.0K
VCC
C149
10 pF
R223
215K
7
U29B
LM393M
5
6
R222
2.15K
R221
0
R219
2.15K
C151
0.1 uF
LD[0..6]
(10)
LD[0..15]
(10)
VCC
31
32
5
3
4
30
34
U11
AVDD
AVDD
DVDD
DGND
DGND
AGND
AGND
/CLR
/DE
CLK
REF+
R3
6
12
11
17
23
(10)
/ADC-RD
(10)
ADC-CLK
(8)
REF+

FIG.110C

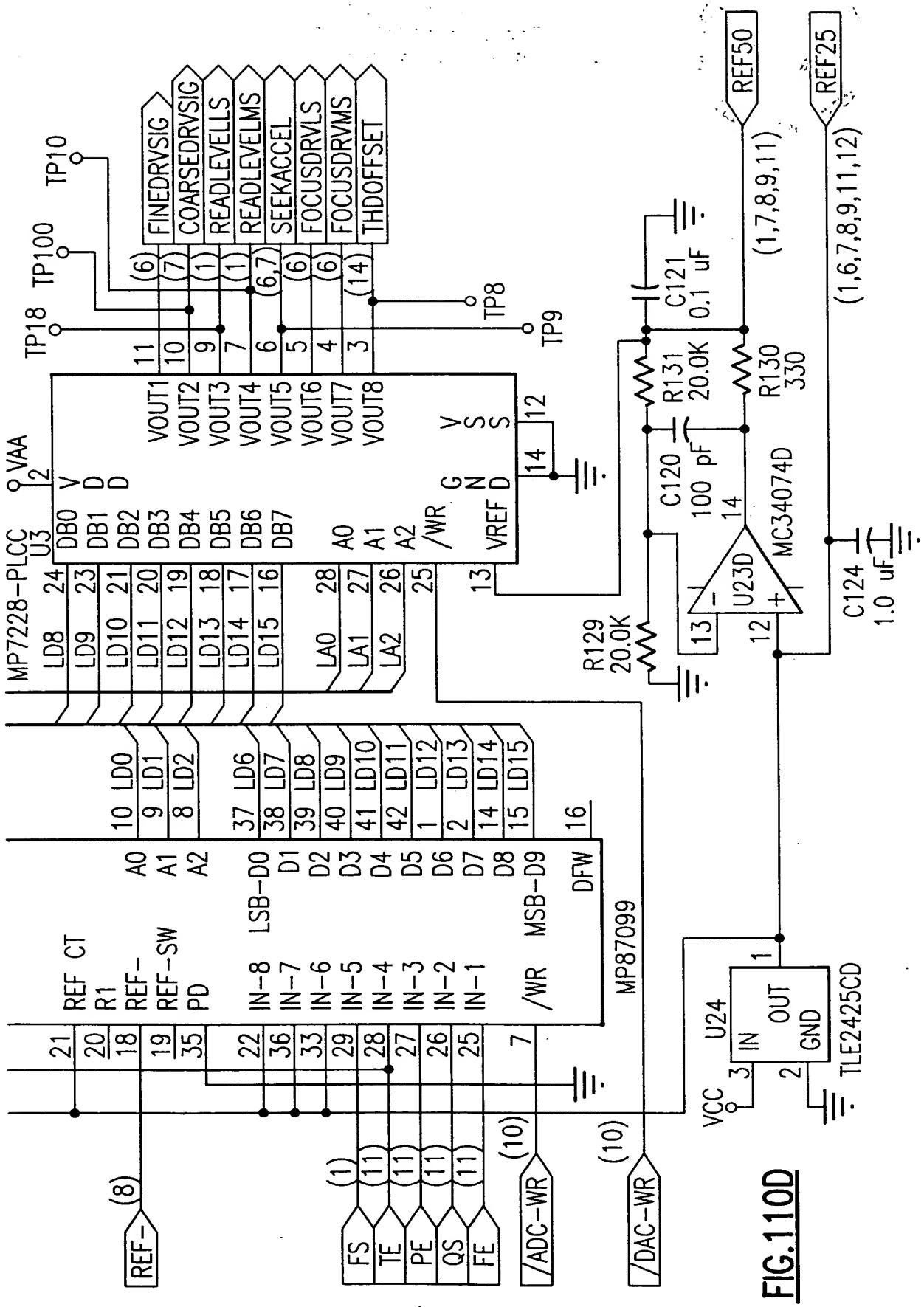

MP7228-PLCC
U3
VAA
TP10
TP100
TP18
TP8
TP9
FINEDRVSIG
COARSEDRVSIG
READLEVELLS
READLEVELMS
SEEKACCEL
FOCUSDRVLS
FOCUSDRVMS
THDOFFSET
VOUT1
VOUT2
VOUT3
VOUT4
VOUT5
VOUT6
VOUT7
VOUT8
VSS
GND
VREF
/WR
A0
A1
A2
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
LD8
LD9
LD10
LD11
LD12
LD13
LD14
LD15
LA0
LA1
LA2
MP87099
LSB-D0
MSB-D9
DFW
REF CT
R1
REF-
REF-SW
PD
IN-8
IN-7
IN-6
IN-5
IN-4
IN-3
IN-2
IN-1
REF50
REF25
C121
0.1 uF
R131
20.0K
R130
330
C120
100 pF
R129
20.0K
U23D
MC34074D
C124
1.0 uF
U24
IN
OUT
GND
TLE2425CD
VCC
REF-
FS
TE
PE
QS
FE
/ADC-WR
/DAC-WR

FIG.110D

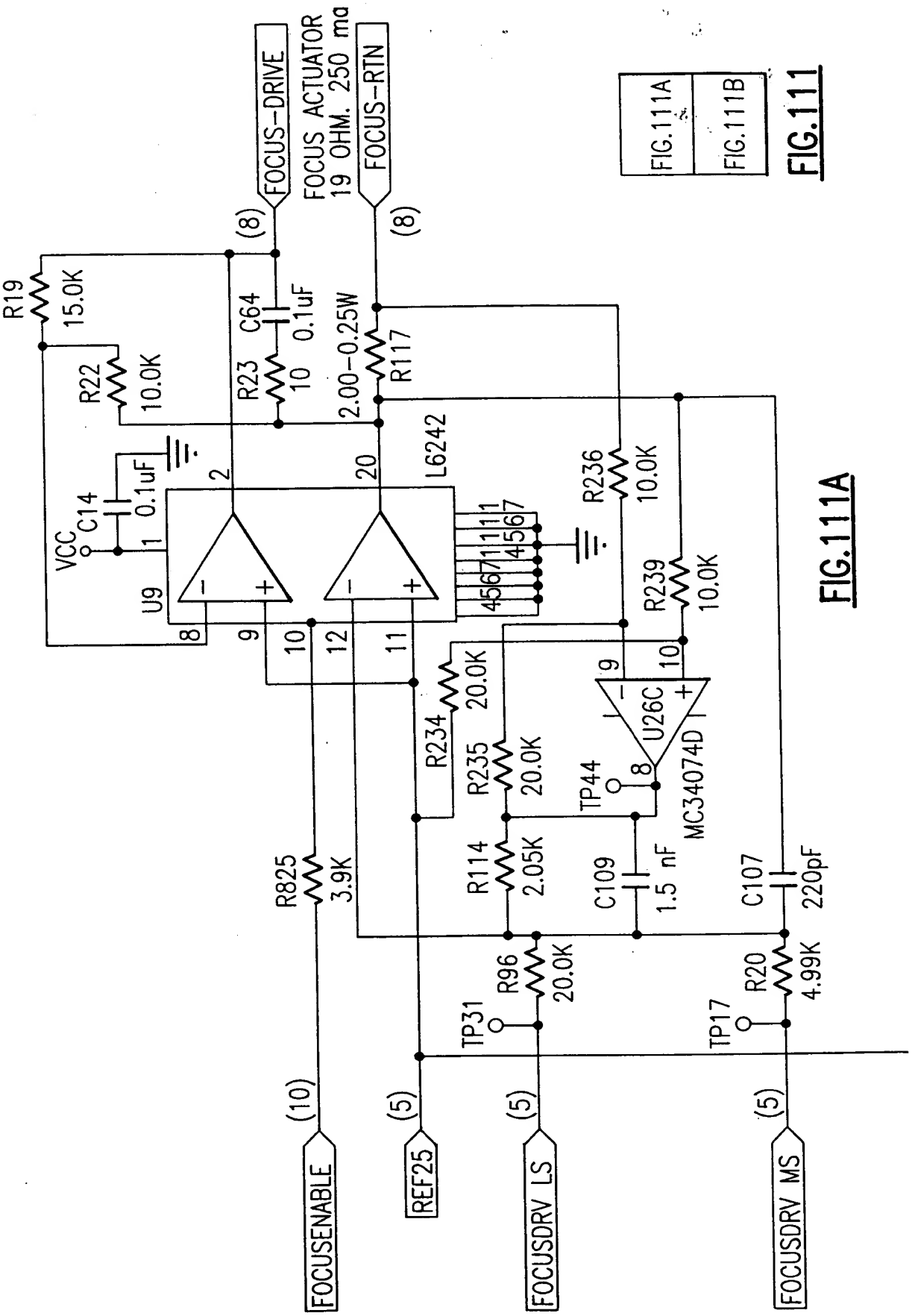


FIG.111A
FIG.111B

FIG.111

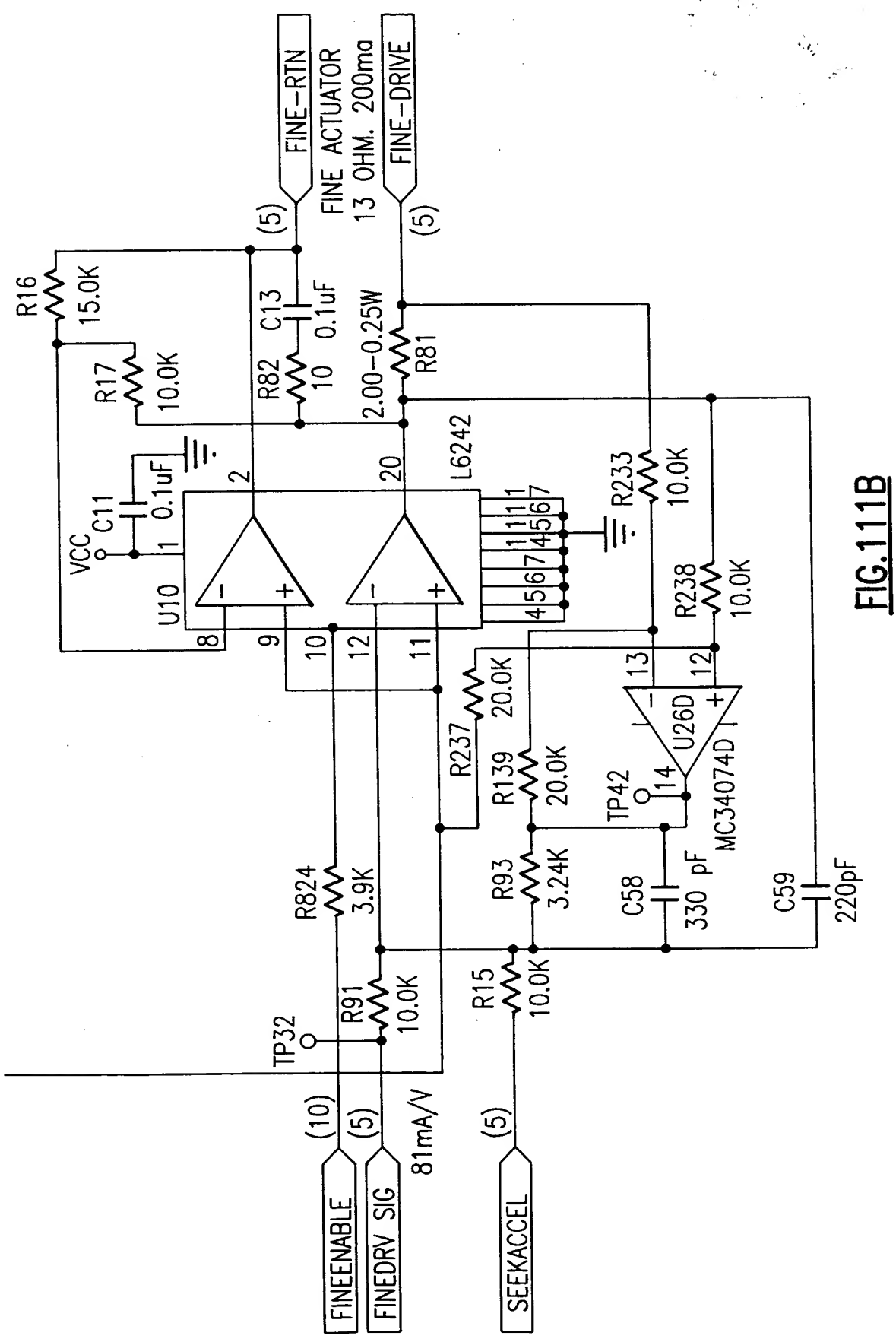
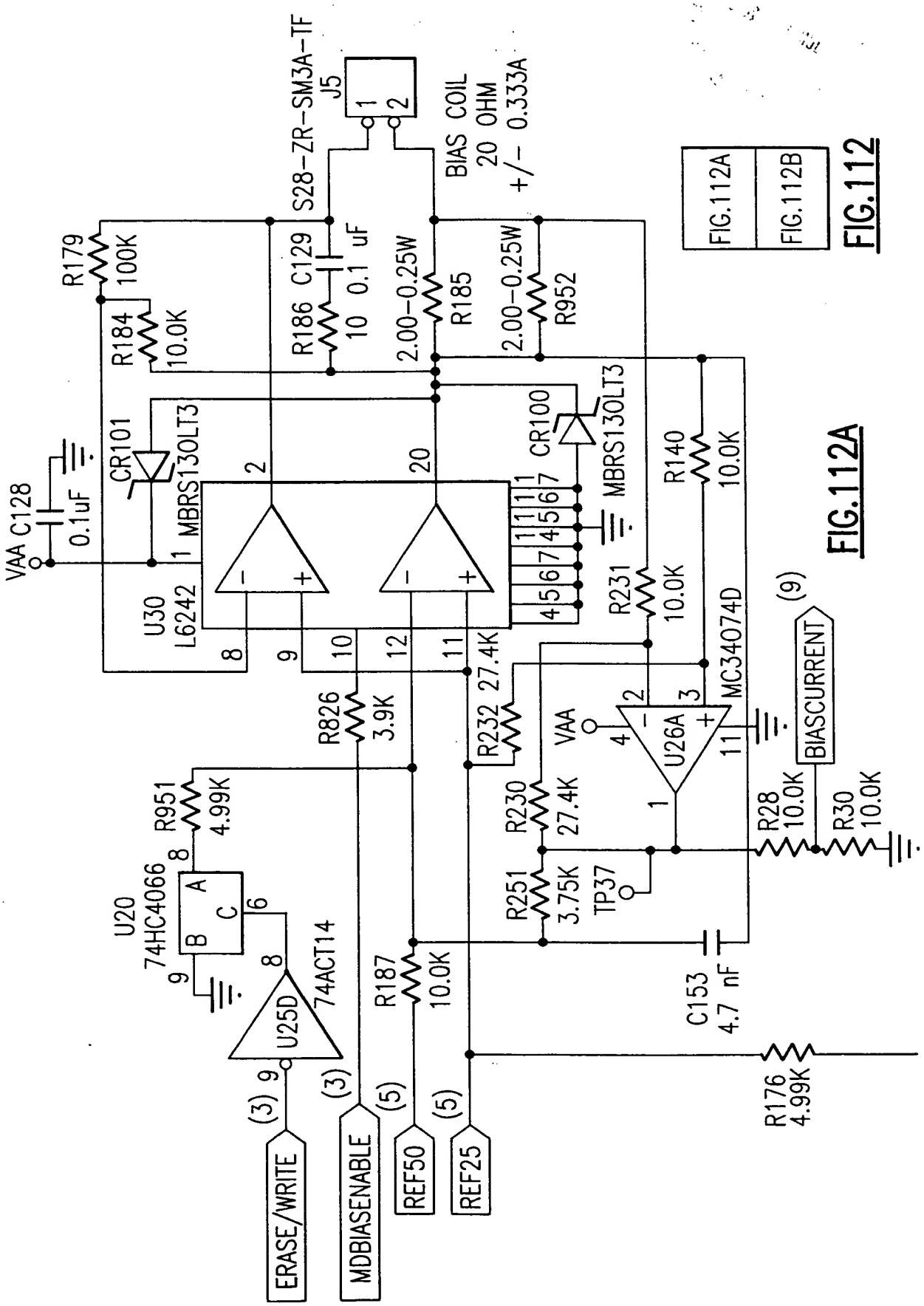

FINE-RTN
FINE ACTUATOR
13 OHM. 200ma
FINE-DRIVE
(5)
(5)
R16
15.0K
R17
10.0K
R82
10
C13
0.1uF
2.00-0.25W
R81
VCC
C11
0.1uF
U10
L6242
R233
10.0K
R238
10.0K
R237
20.0K
R139
20.0K
U26D
MC34074D
TP42
C58
330 pF
C59
220pF
R824
3.9K
R93
3.24K
TP32
R91
10.0K
R15
10.0K
(10)
(5)
(5)
FINEENABLE
FINEDRV SIG
81mA/V
SEEKACCEL

FIG.111B


VAA C128
0.1uF
CR101
MBRS130LT3
U30
L6242
R179
100K
R184
10.0K
S28-ZR-SM3A-TF
J5
R186 C129
10 0.1 uF
2.00-0.25W
R185
BIAS COIL
20 OHM
+/- 0.333A
2.00-0.25W
R952
CR100
MBRS130LT3
R140
10.0K
R231
10.0K
R826
3.9K
R232 27.4K
MC34074D
U26A
VAA
R230
27.4K
R251
3.75K
TP37
C153
4.7 nF
R28
10.0K
R30
10.0K
BIASCURRENT
(9)
R176
4.99K
R951
4.99K
U20
74HC4066
74ACT14
U25D
R187
10.0K
(3)
ERASE/WRITE
(3)
MDBIASENABLE
(5)
REF50
(5)
REF25
FIG.112A
FIG.112B
FIG.112

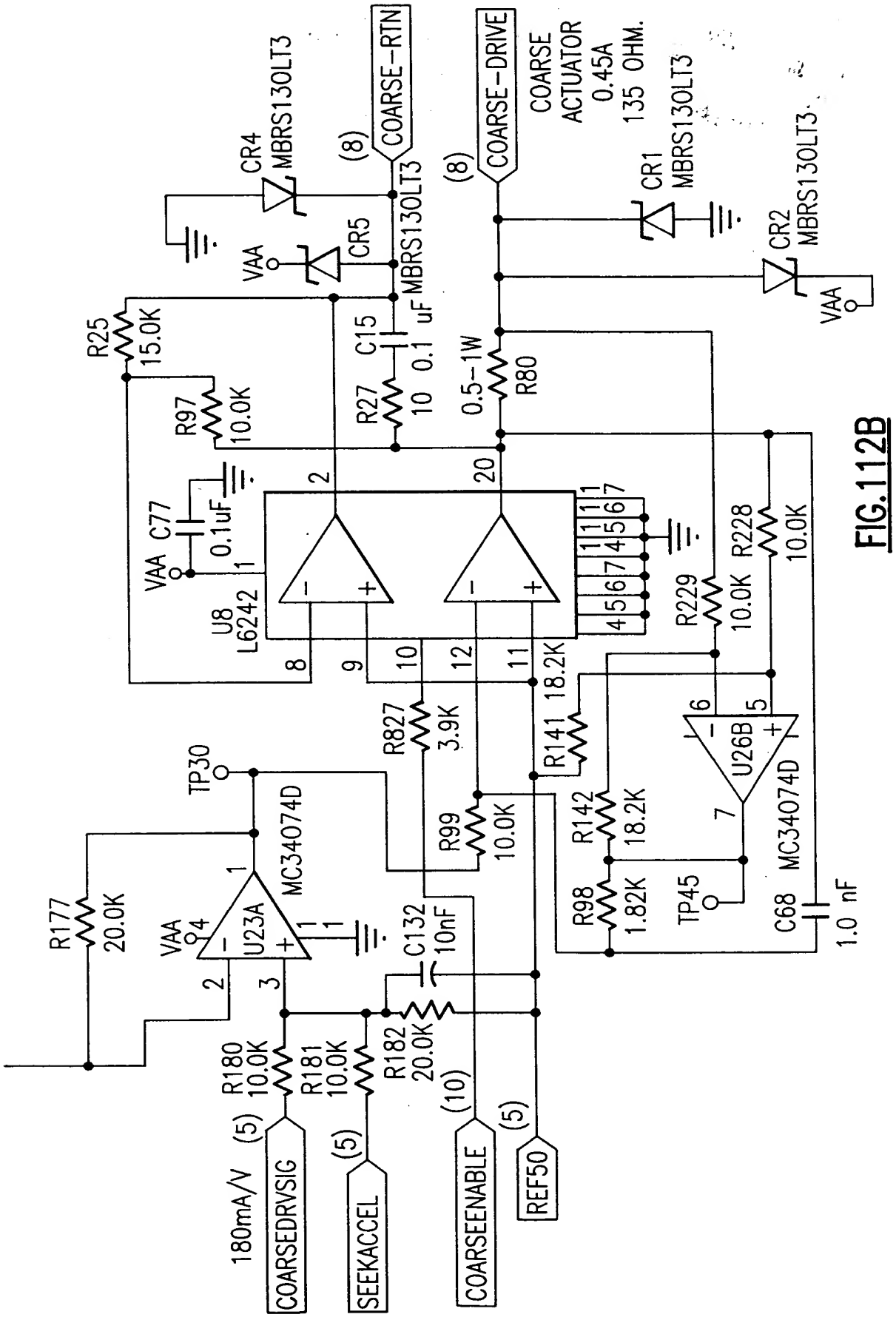

COARSE-RTN
COARSE-DRIVE
COARSE ACTUATOR 0.45A 135 OHM.
CR4 MBRS130LT3
CR5
CR1 MBRS130LT3
CR2 MBRS130LT3
VAA
R25 15.0K
R97 10.0K
C15 0.1 uF
R27 10
R80 0.5-1W
C77 0.1uF
U8 L6242
R228 10.0K
R229 10.0K
R827 3.9K
R141 18.2K
R142 18.2K
R99 10.0K
R98 1.82K
U26B MC34074D
U23A MC34074D
TP30
TP45
C132 10nF
C68 1.0 nF
R177 20.0K
R180 10.0K
R181 10.0K
R182 20.0K
180mA/V
COARSEDRVSIG
SEEKACCEL
COARSEENABLE
REF50

FIG.112B

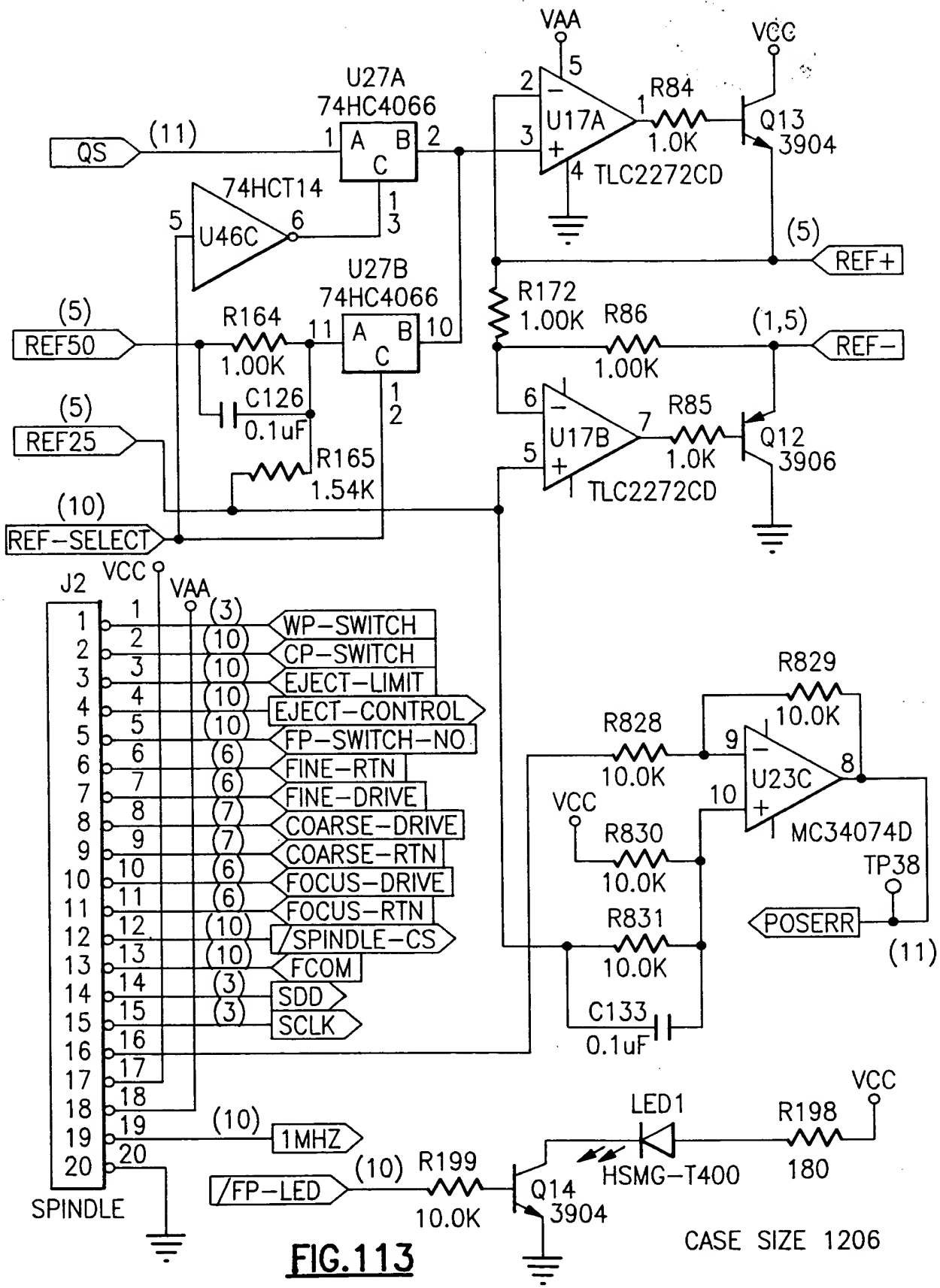
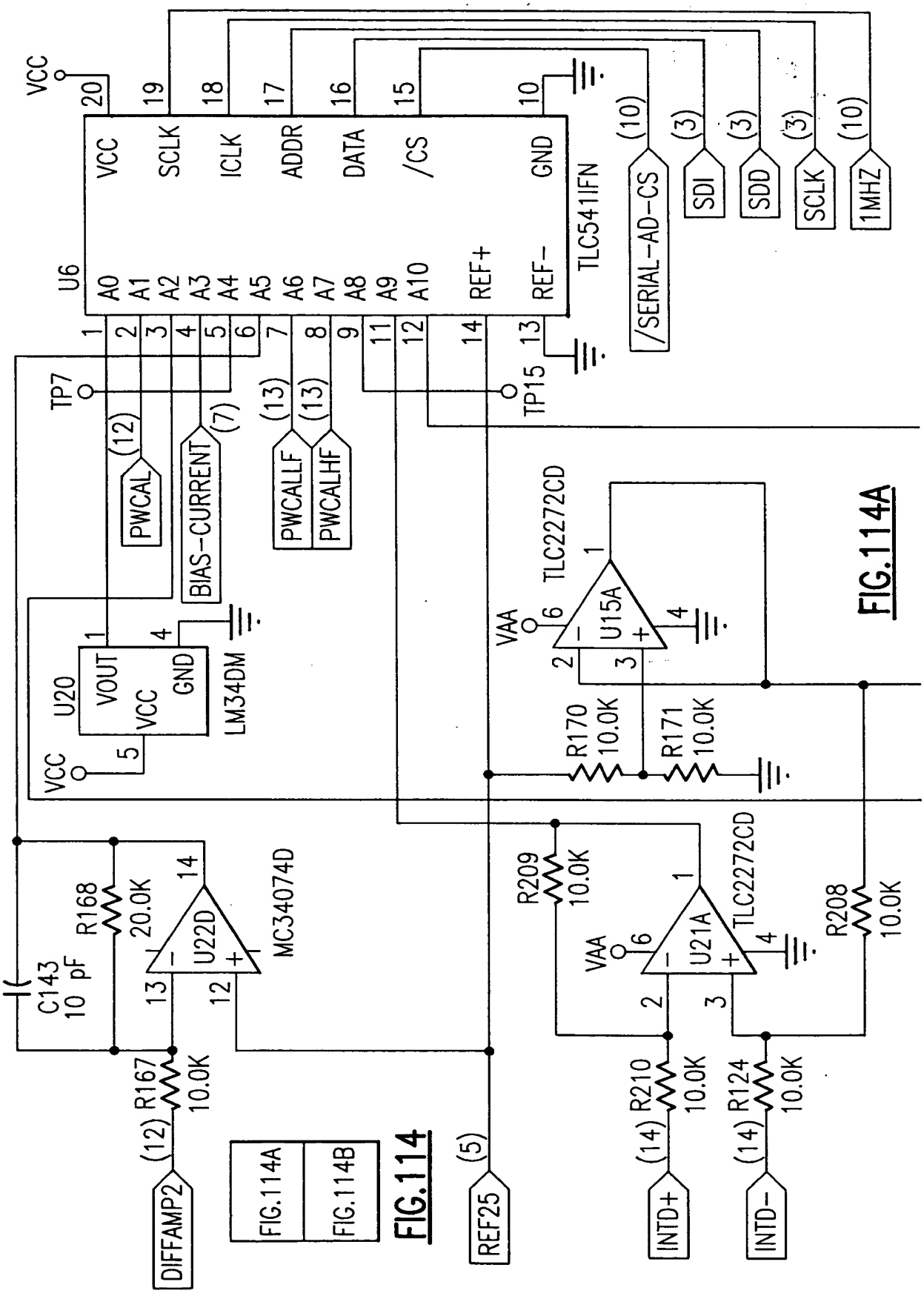

VAA
VCC
U27A
74HC4066
QS
(11)
U17A
TLC2272CD
R84
1.0K
Q13
3904
74HCT14
U46C
(5)
REF+
U27B
74HC4066
R172
1.00K
R86
1.00K
(1,5)
REF-
(5)
REF50
R164
1.00K
C126
0.1uF
(5)
REF25
R165
1.54K
U17B
TLC2272CD
R85
1.0K
Q12
3906
(10)
REF-SELECT
J2
VCC
VAA
WP-SWITCH
CP-SWITCH
EJECT-LIMIT
EJECT-CONTROL
FP-SWITCH-NO
FINE-RTN
FINE-DRIVE
COARSE-DRIVE
COARSE-RTN
FOCUS-DRIVE
FOCUS-RTN
/SPINDLE-CS
FCOM
SDD
SCLK
SPINDLE
R829
10.0K
R828
10.0K
U23C
MC34074D
VCC
R830
10.0K
R831
10.0K
C133
0.1uF
TP38
POSERR
(11)
1MHZ
/FP-LED
R199
10.0K
Q14
3904
LED1
HSMG-T400
R198
180
VCC
CASE SIZE 1206

FIG.113


VCC
U6
TLC541IFN
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
REF+
REF-
VCC
SCLK
ICLK
ADDR
DATA
/CS
GND
/SERIAL-AD-CS
SDI
SDD
SCLK
1MHZ
TP7
TP15
PWCAL
BIAS-CURRENT
PWCALLF
PWCALHF
U20
LM34DM
VOUT
GND
U15A
TLC2272CD
VAA
R170 10.0K
R171 10.0K
U22D
MC34074D
R168 20.0K
C143 10 pF
R167 10.0K
DIFFAMP2
U21A
R209 10.0K
R208 10.0K
R210 10.0K
R124 10.0K
INTD+
INTD-
REF25
FIG.114A
FIG.114B
FIG.114
FIG.114A

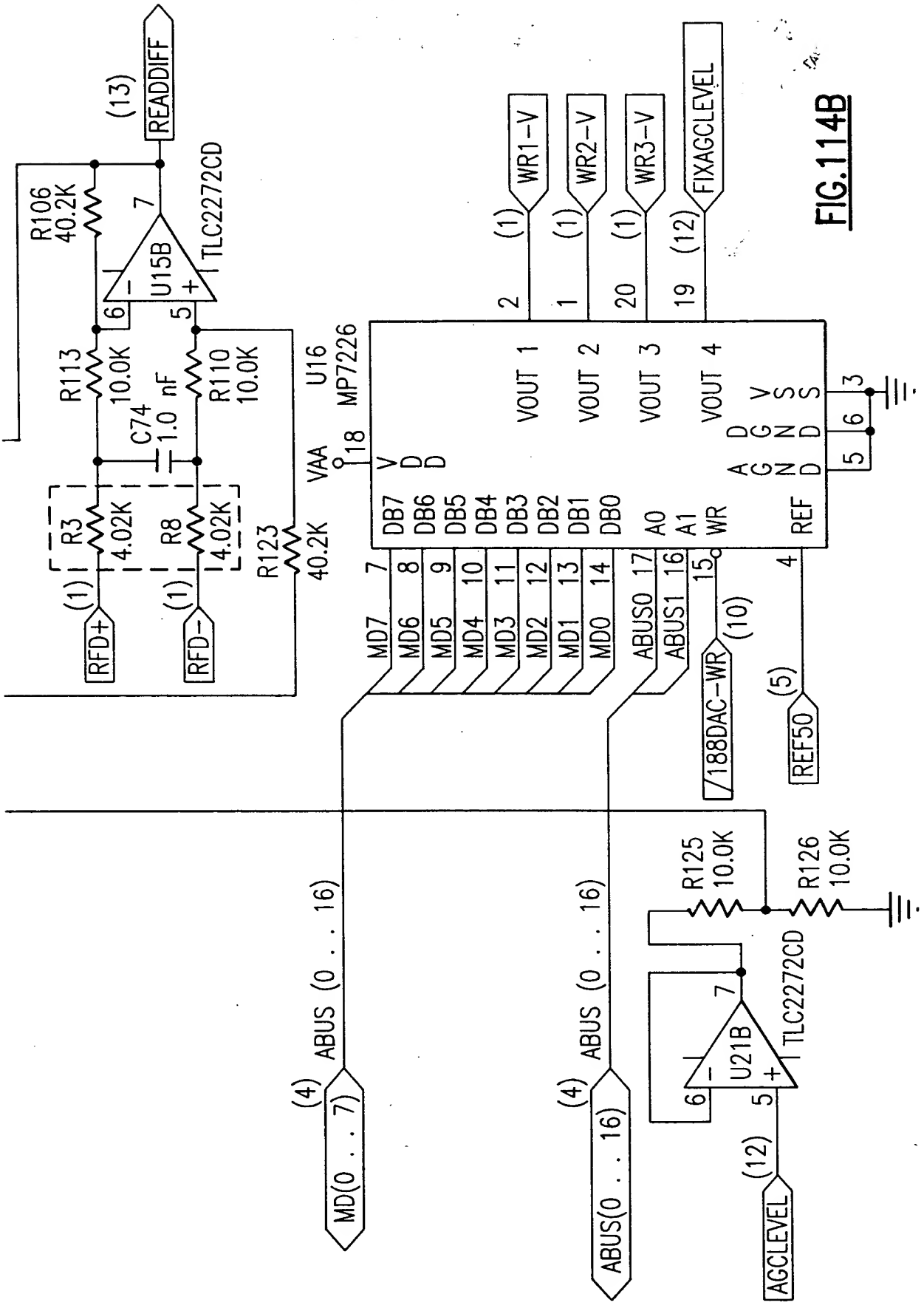

READDIFF
(13)
R106
40.2K
U15B
TLC2272CD
R113
10.0K
C74
1.0 nF
R110
10.0K
R3
4.02K
R8
4.02K
R123
40.2K
RFD+
RFD-
U16
MP7226
VAA
VOUT 1
VOUT 2
VOUT 3
VOUT 4
WR1-V
WR2-V
WR3-V
FIXAGCLEVEL
DB7
DB6
DB5
DB4
DB3
DB2
DB1
DB0
A0
A1
WR
REF
AGND
DGND
/188DAC-WR
REF50
MD(0 . . 7)
ABUS (0 . . 16)
ABUS(0 . . 16)
R125
10.0K
R126
10.0K
U21B
TLC2272CD
AGCLEVEL

FIG.114B

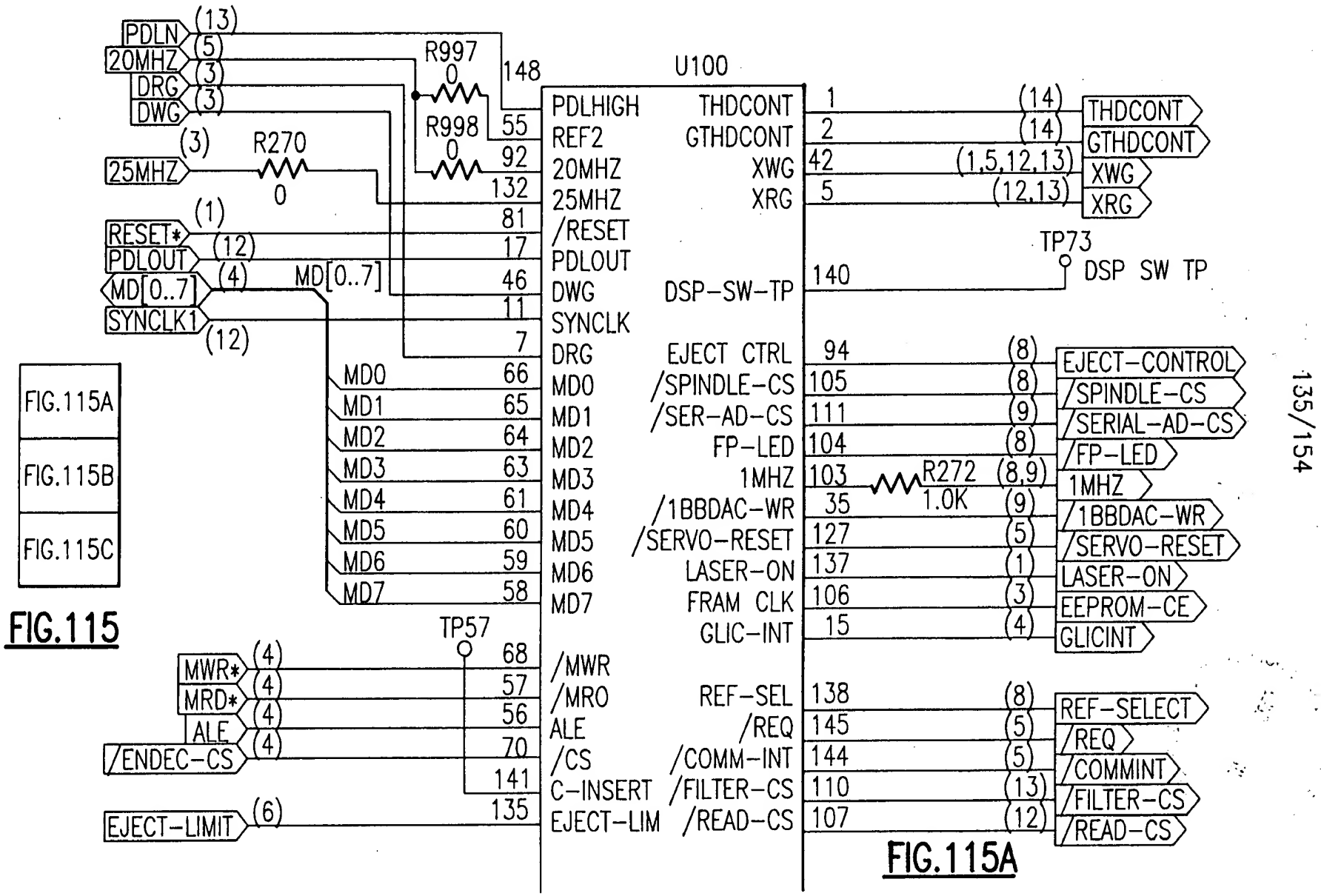


FIG.115A

FIG.115B

FIG.115C

FIG.115

FIG.115A

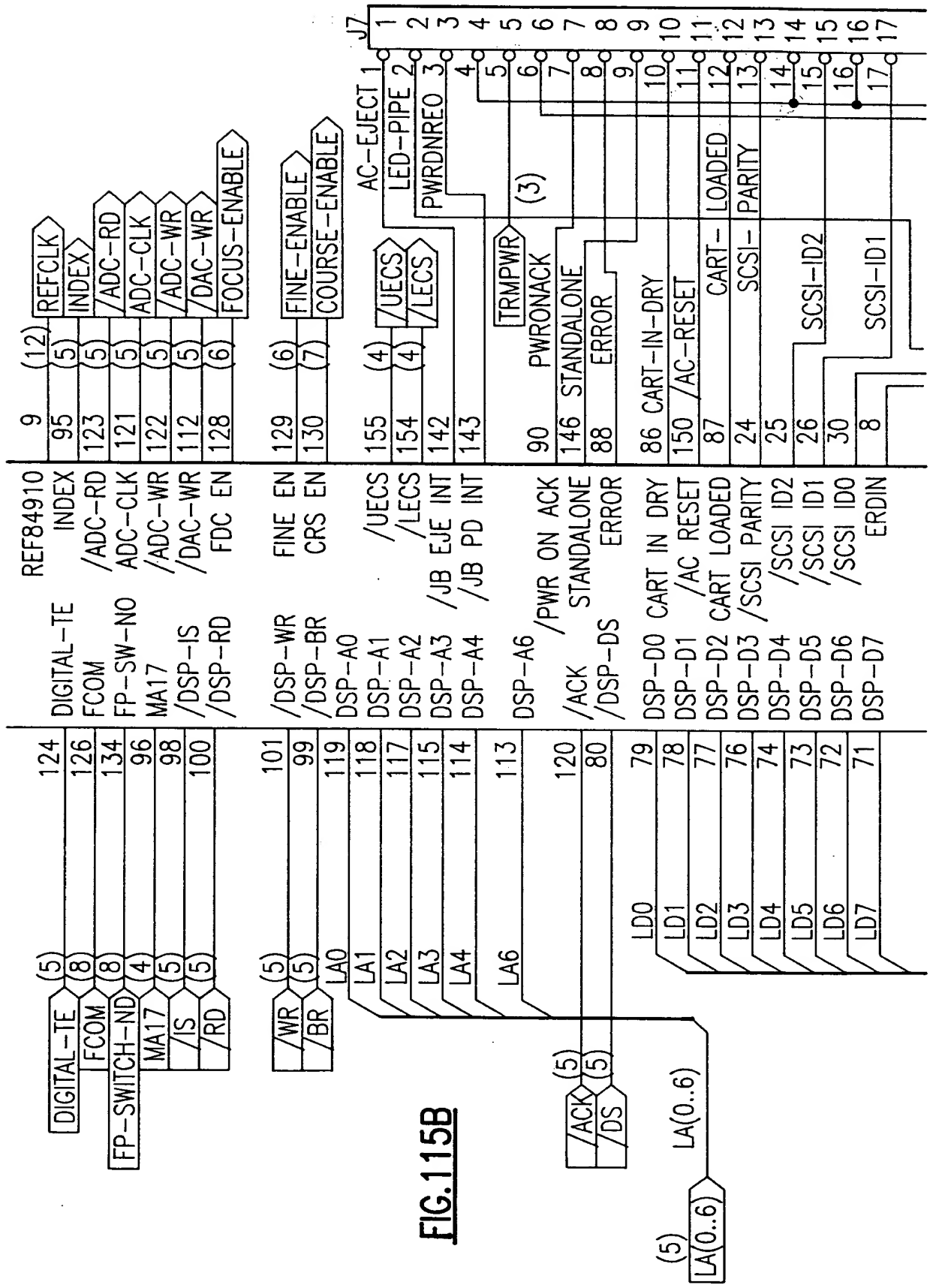

REF84910
INDEX
/ADC-RD
ADC-CLK
/ADC-WR
/DAC-WR
FDC EN
FINE EN
CRS EN
/UECS
/LECS
/JB EJE INT
/JB PD INT
/PWR ON ACK
STANDALONE
ERROR
CART IN DRY
/AC RESET
CART LOADED
/SCSI PARITY
/SCSI ID2
/SCSI ID1
/SCSI ID0
ERDIN
REFCLK
INDEX
/ADC-RD
ADC-CLK
/ADC-WR
/DAC-WR
FOCUS-ENABLE
FINE-ENABLE
COURSE-ENABLE
/UECS
/LECS
TRMPWR
PWRONACK
STANDALONE
ERROR
CART-IN-DRY
/AC-RESET
CART-
LOADED
SCSI-
PARITY
SCSI-ID2
SCSI-ID1
AC-EJECT 1
LED-PIPE 2
PWRDNREQ 3
(3)
J7
DIGITAL-TE
FCOM
FP-SW-NO
MA17
/DSP-IS
/DSP-RD
/DSP-WR
/DSP-BR
DSP-A0
DSP-A1
DSP-A2
DSP-A3
DSP-A4
DSP-A6
/ACK
/DSP-DS
DSP-D0
DSP-D1
DSP-D2
DSP-D3
DSP-D4
DSP-D5
DSP-D6
DSP-D7
/WR
/BR
LA0
LA1
LA2
LA3
LA4
LA6
LD0
LD1
LD2
LD3
LD4
LD5
LD6
LD7
/IS
/RD
/ACK
/DS
LA(0..6)
LA(0..6)

FIG.115B

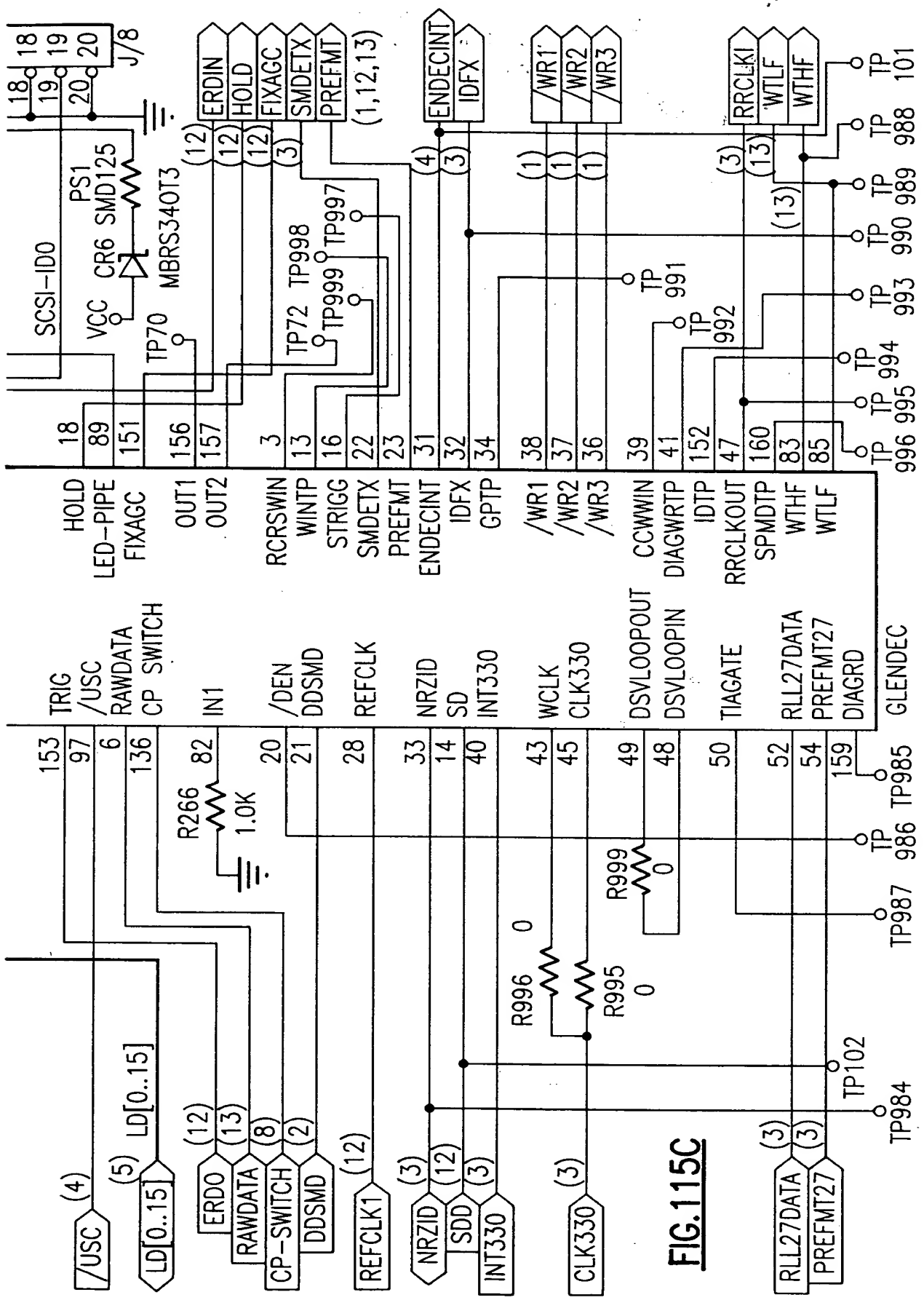

/USC
LD[0..15]
ERDO
RAWDATA
CP-SWITCH
DDSMD
REFCLK1
NRZID
SDD
INT330
CLK330
RLL27DATA
PREFMT27
R266 1.0K
R996 0
R995 0
R999 0
TP984
TP987
TP102
TP985
TP986
SCSI-ID0
VCC
CR6 MBRS340T3
PS1 SMD125
J/8
TP70
TP72
TP998
TP999
TP997
TP991
TP992
TP993
TP994
TP995
TP996
TP988
TP989
TP990
TP101
HOLD
LED-PIPE
FIXAGC
OUT1
OUT2
RCRSWIN
WINTP
STRIGG
SMDETX
PREFMT
ENDECINT
IDFX
GPTP
/WR1
/WR2
/WR3
CCWWIN
DIAGWRTP
IDTP
RRCLKOUT
SPMDTP
WTHF
WTLF
TRIG
/USC
RAWDATA
CP SWITCH
IN1
/DEN
DDSMD
REFCLK
NRZID
SD
INT330
WCLK
CLK330
DSVLOOPOUT
DSVLOOPIN
TIAGATE
RLL27DATA
PREFMT27
DIAGRD
GLENDEC
ERDIN
HOLD
FIXAGC
SMDETX
PREFMT
ENDECINT
IDFX
/WR1
/WR2
/WR3
RRCLKI
WTLF
WTHF
(1,12,13)

FIG.115C

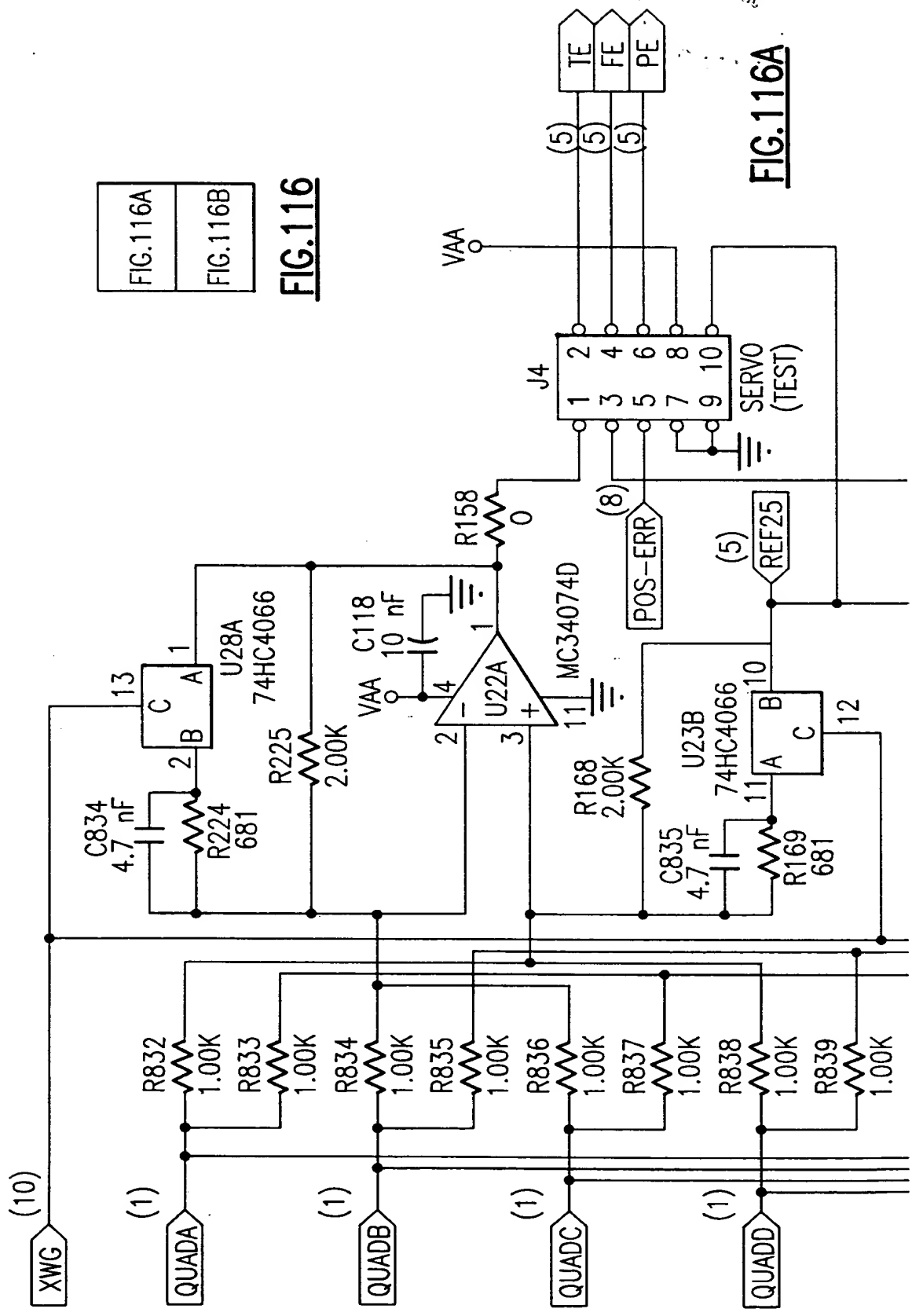
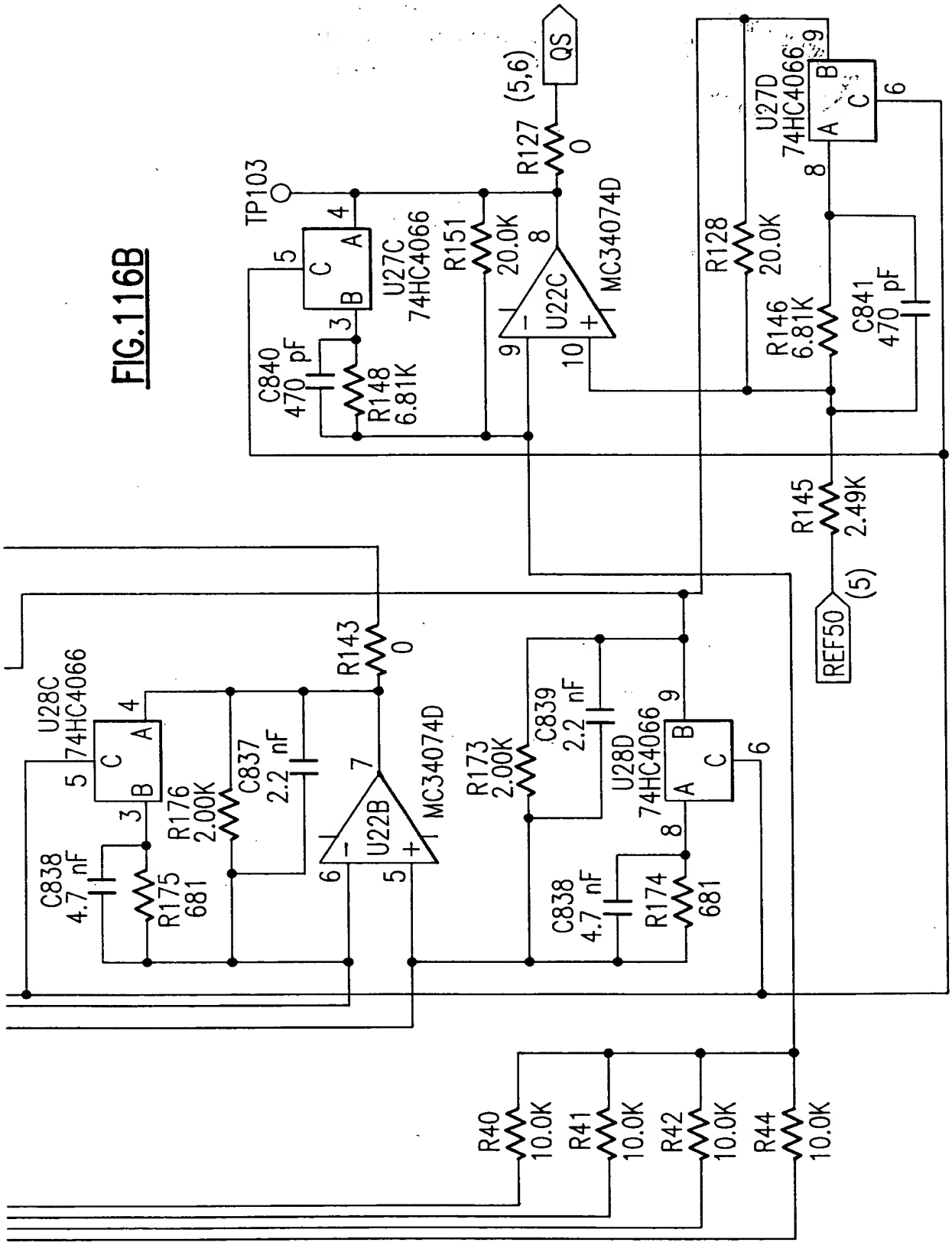
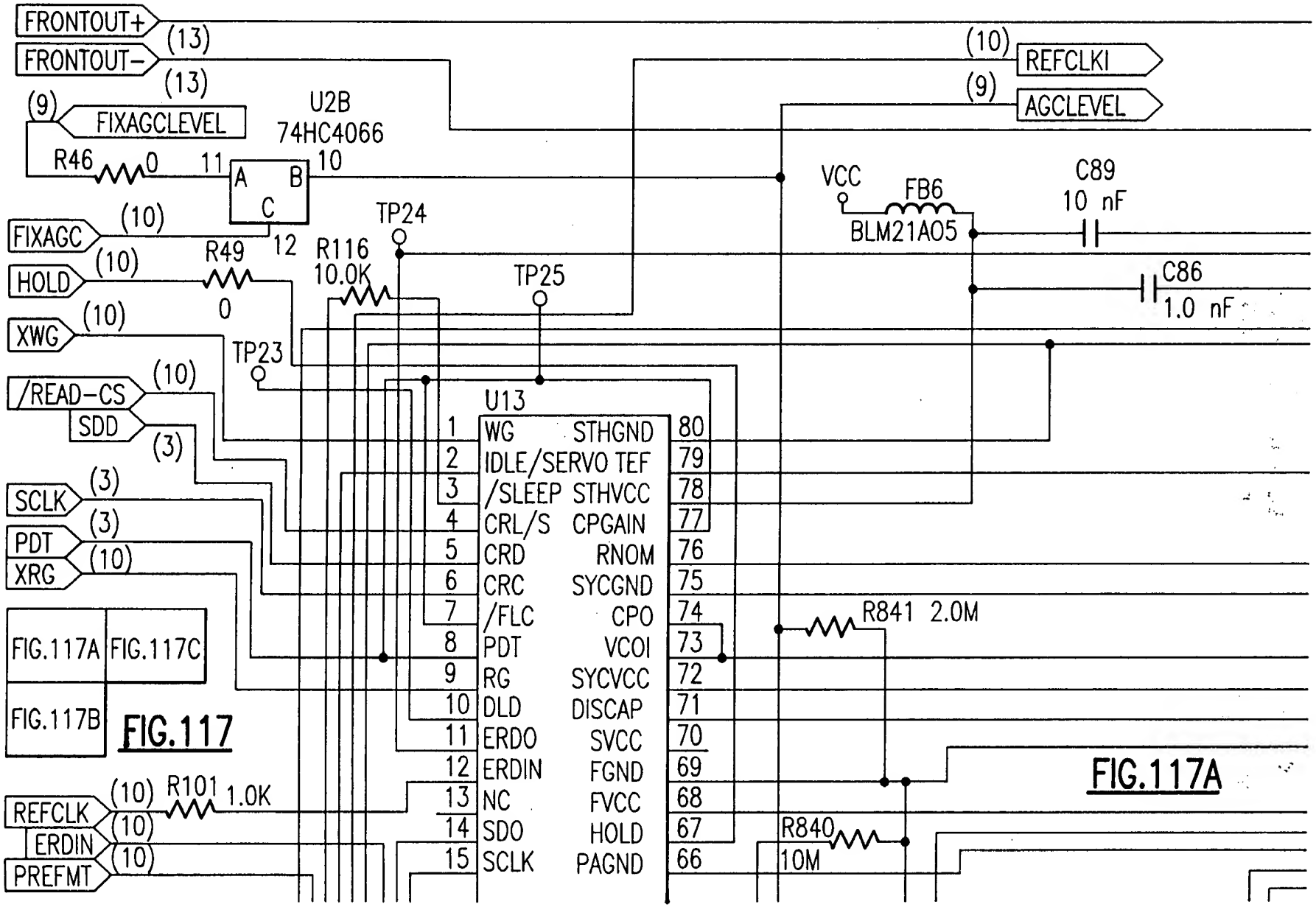


FIG.116A
FIG.116B
FIG.116
FIG.116A
TE
FE
PE
(5)
(5)
(5)
VAA
J4
1 2
3 4
5 6
7 8
9 10
SERVO
(TEST)
R158
0
(8)
POS-ERR
(5)
REF25
U28A
74HC4066
C118
10 nF
MC34074D
U22A
U23B
74HC4066
R225
2.00K
R168
2.00K
C834
4.7 nF
R224
681
C835
4.7 nF
R169
681
R832
1.00K
R833
1.00K
R834
1.00K
R835
1.00K
R836
1.00K
R837
1.00K
R838
1.00K
R839
1.00K
(10)
XWG
(1)
QUADA
(1)
QUADB
(1)
QUADC
(1)
QUADD

FIG.116B


TP103
QS
(5,6)
R127
0
U27C
74HC4066
R151
20.0K
U22C
MC34074D
C840
470 pF
R148
6.81K
U27D
74HC4066
R128
20.0K
R146
6.81K
C841
470 pF
R145
2.49K
REF50
(5)
U28C
74HC4066
R143
0
U22B
MC34074D
C838
4.7 nF
R175
681
R176
2.00K
C837
2.2 nF
R173
2.00K
C839
2.2 nF
U28D
74HC4066
C838
4.7 nF
R174
681
R40
10.0K
R41
10.0K
R42
10.0K
R44
10.0K


FRONTOUT+
FRONTOUT-
(13)
(13)
(9)
FIXAGCLEVEL
R46
0
11
U2B
74HC4066
A
B
C
10
12
(10)
FIXAGC
(10)
HOLD
R49
0
(10)
XWG
TP24
R116
10.0K
TP25
TP23
(10)
/READ-CS
SDD
(3)
(3)
SCLK
(3)
PDT
(10)
XRG
U13
1 WG
2 IDLE/SERVO
3 /SLEEP
4 CRL/S
5 CRD
6 CRC
7 /FLC
8 PDT
9 RG
10 DLD
11 ERDO
12 ERDIN
13 NC
14 SDO
15 SCLK
STHGND 80
TEF 79
STHVCC 78
CPGAIN 77
RNOM 76
SYCGND 75
CPO 74
VCOI 73
SYCVCC 72
DISCAP 71
SVCC 70
FGND 69
FVCC 68
HOLD 67
PAGND 66
VCC
FB6
BLM21A05
C89
10 nF
C86
1.0 nF
(10)
REFCLKI
(9)
AGCLEVEL
R841 2.0M
R840
10M
FIG.117A
FIG.117A
FIG.117C
FIG.117B
FIG.117
(10)
R101
1.0K
REFCLK
(10)
ERDIN
(10)
PREFMT

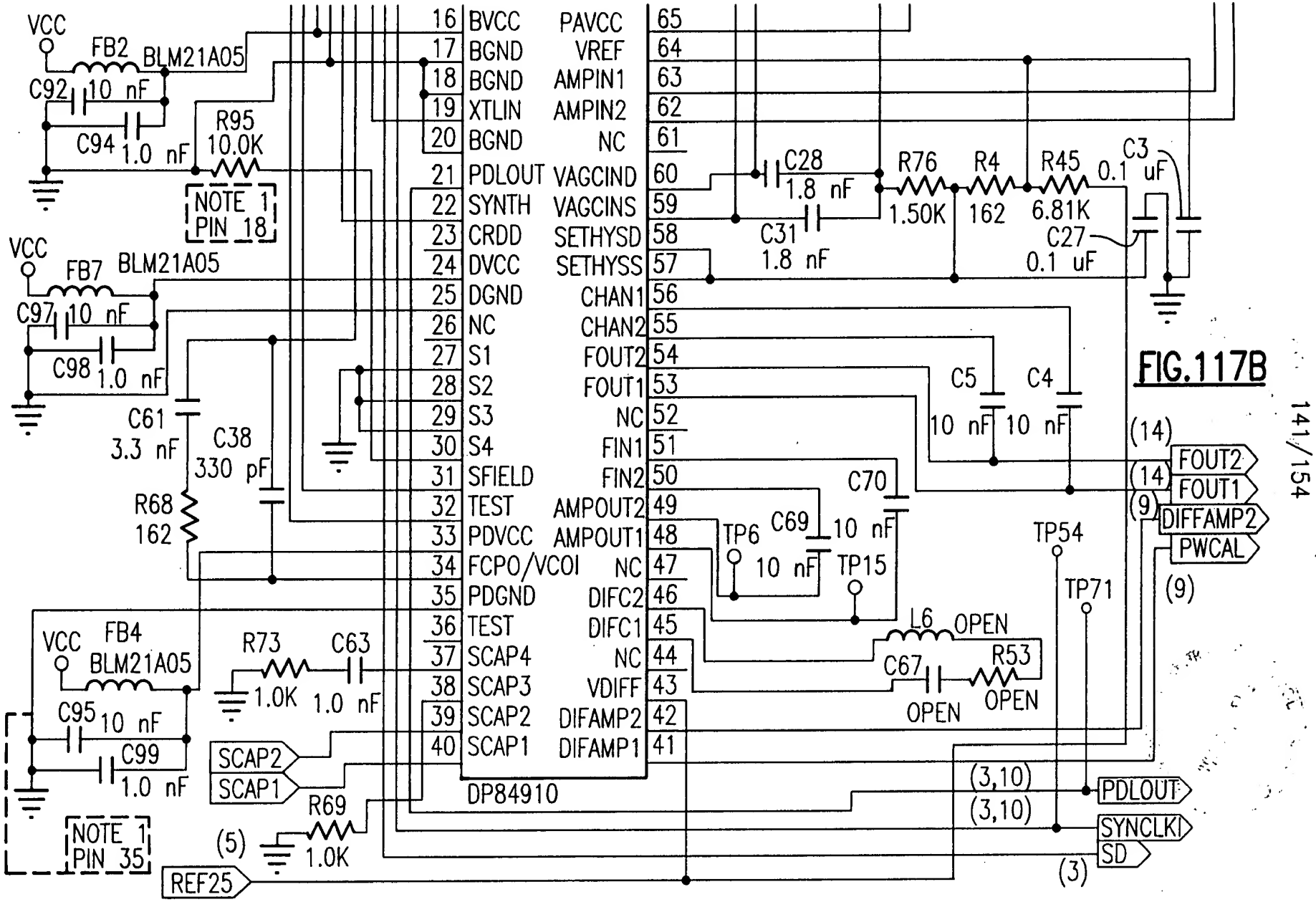

VCC
FB2 BLM21A05
C92 10 nF
C94 1.0 nF
R95 10.0K
NOTE 1 PIN 18
VCC
FB7 BLM21A05
C97 10 nF
C98 1.0 nF
C61 3.3 nF
C38 330 pF
R68 162
VCC
FB4 BLM21A05
C95 10 nF
C99 1.0 nF
NOTE 1 PIN 35
R73 1.0K
C63 1.0 nF
SCAP2
SCAP1
R69 1.0K
(5)
REF25
16 BVCC
17 BGND
18 BGND
19 XTLIN
20 BGND
21 PDLOUT
22 SYNTH
23 CRDD
24 DVCC
25 DGND
26 NC
27 S1
28 S2
29 S3
30 S4
31 SFIELD
32 TEST
33 PDVCC
34 FCPO/VCOI
35 PDGND
36 TEST
37 SCAP4
38 SCAP3
39 SCAP2
40 SCAP1
DP84910
PAVCC 65
VREF 64
AMPIN1 63
AMPIN2 62
NC 61
VAGCIND 60
VAGCINS 59
SETHYSD 58
SETHYSS 57
CHAN1 56
CHAN2 55
FOUT2 54
FOUT1 53
NC 52
FIN1 51
FIN2 50
AMPOUT2 49
AMPOUT1 48
NC 47
DIFC2 46
DIFC1 45
NC 44
VDIFF 43
DIFAMP2 42
DIFAMP1 41
C28 1.8 nF
C31 1.8 nF
R76 1.50K
R4 162
R45 6.81K
C3 0.1 uF
C27 0.1 uF
C5 10 nF
C4 10 nF
C70 10 nF
C69 10 nF
TP6
TP15
TP54
TP71
L6 OPEN
C67 OPEN
R53 OPEN
(14) FOUT2
(14) FOUT1
(9) DIFFAMP2
PWCAL
(9)
(3,10) PDLOUT
(3,10) SYNCLK
SD
(3)

FIG.117B

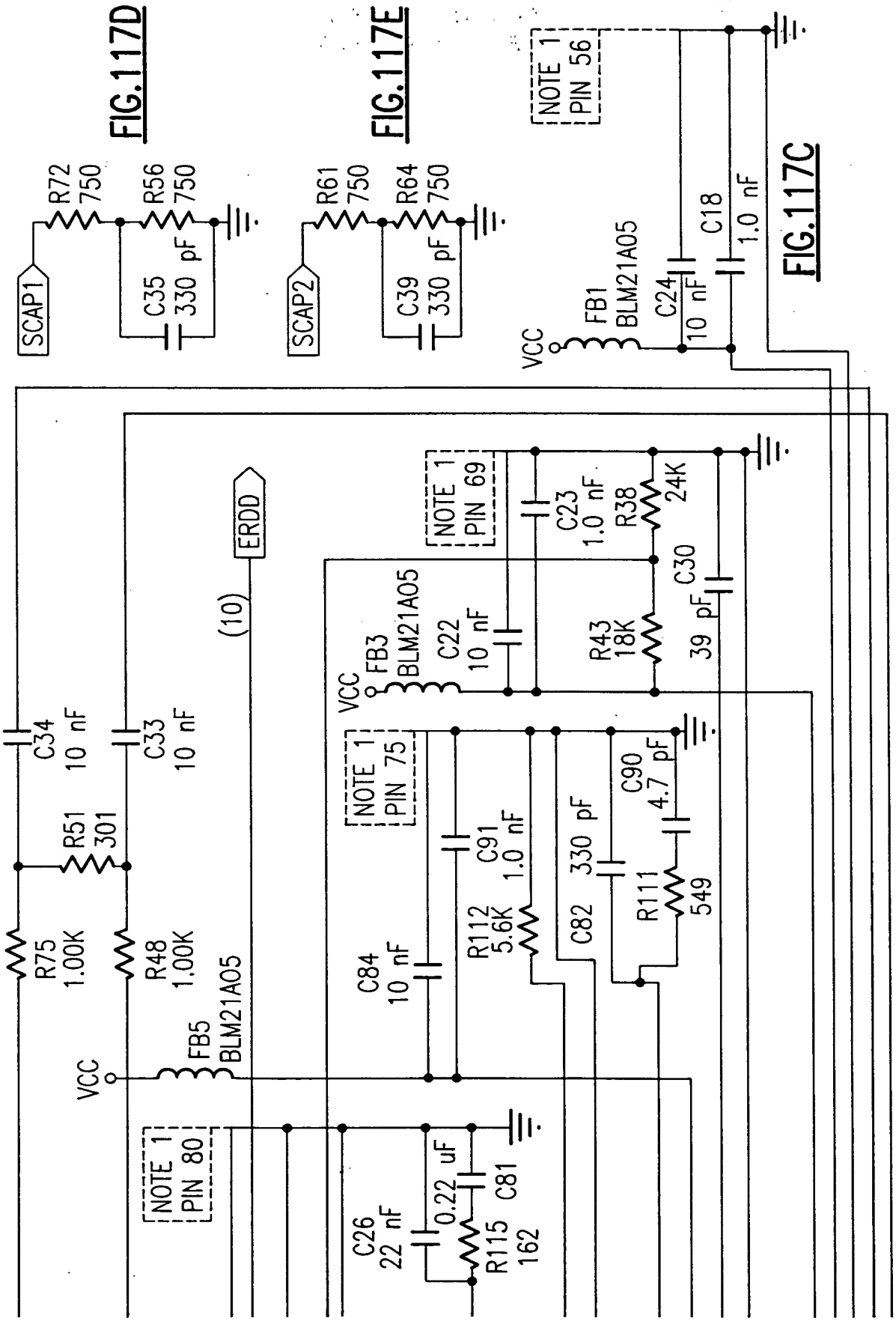


FIG.117D

FIG.117E

FIG.117C

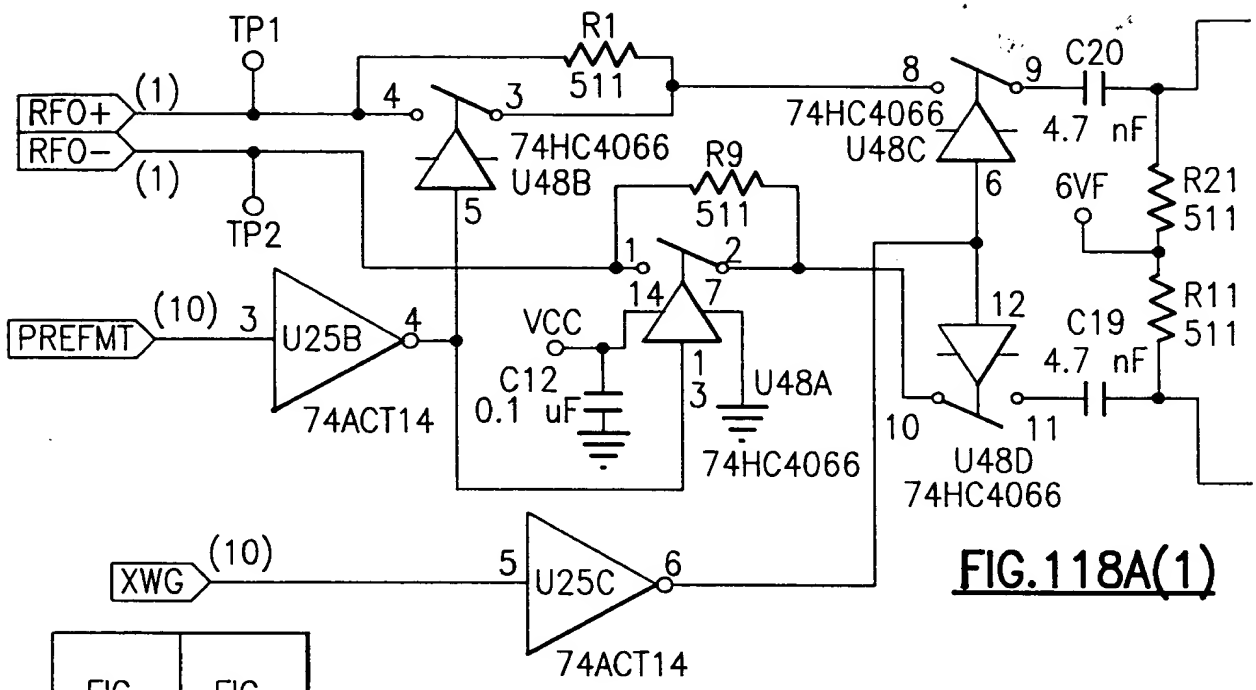


FIG.118A(1)

FIG. 118A(1)	FIG. 118A(2)

FIG.118A

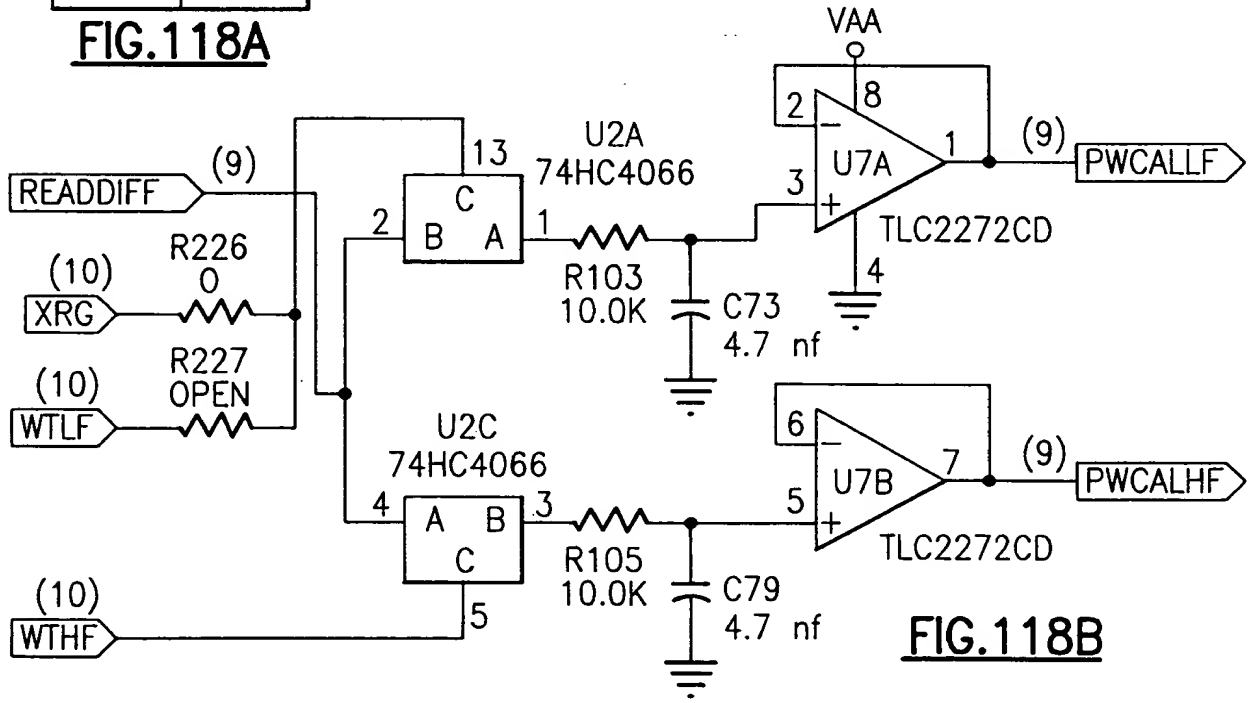


FIG.118B

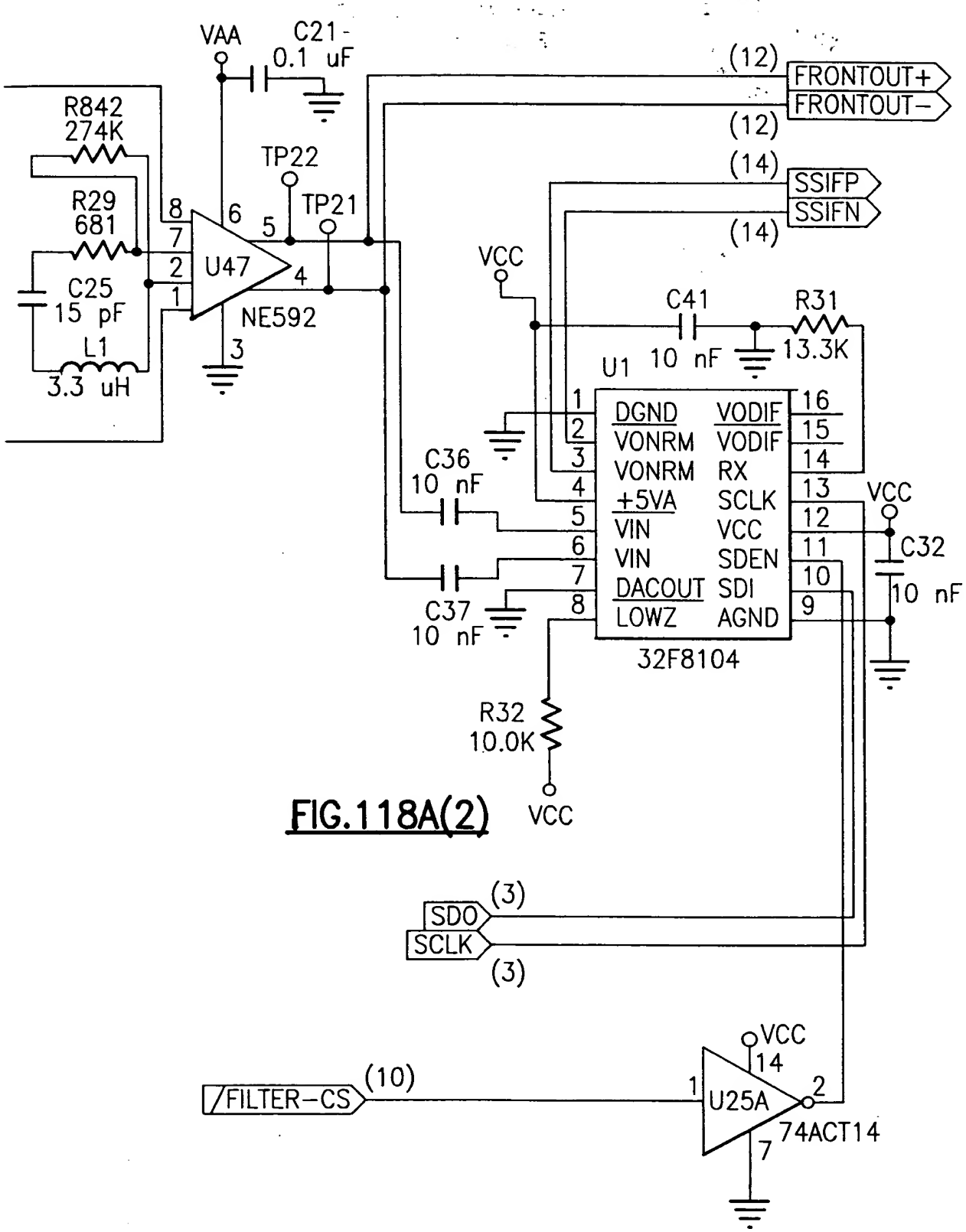

VAA
C21-
0.1 uF
R842
274K
R29
681
C25
15 pF
L1
3.3 uH
U47
NE592
TP22
TP21
(12)
FRONTOUT+
FRONTOUT-
(14)
SSIFP
SSIFN
VCC
C41
10 nF
R31
13.3K
U1
DGND
VONRM
VONRM
+5VA
VIN
VIN
DACOUT
LOWZ
VODIF
VODIF
RX
SCLK
VCC
SDEN
SDI
AGND
32F8104
C36
10 nF
C37
10 nF
C32
10 nF
R32
10.0K
(3)
SDO
SCLK
/FILTER-CS
(10)
U25A
74ACT14

FIG.118A(2)

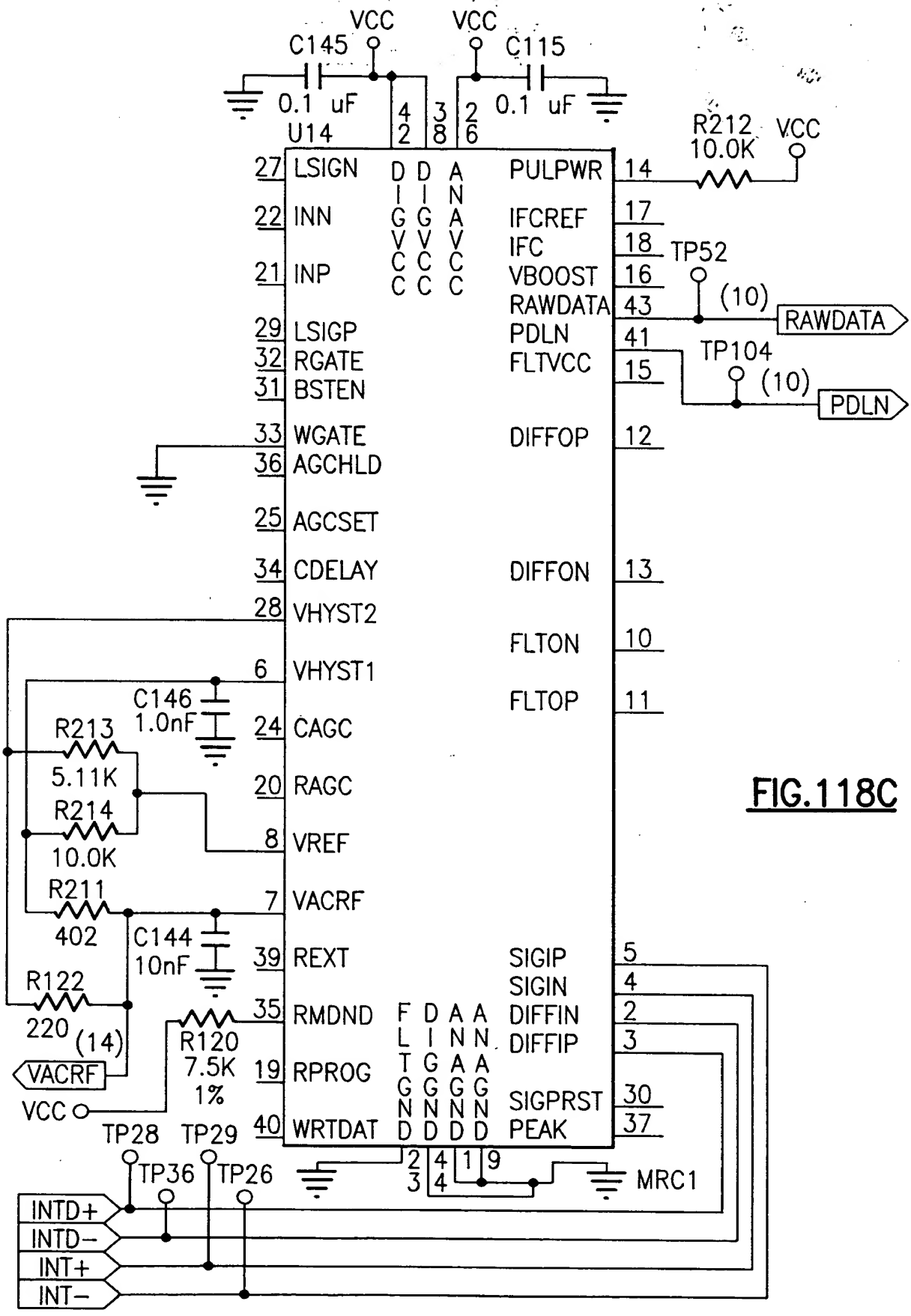

VCC
VCC
C145
C115
0.1 uF
0.1 uF
U14
R212
10.0K
VCC
27 LSIGN
22 INN
21 INP
29 LSIGP
32 RGATE
31 BSTEN
33 WGATE
36 AGCHLD
25 AGCSET
34 CDELAY
28 VHYST2
6 VHYST1
24 CAGC
20 RAGC
8 VREF
7 VACRF
39 REXT
35 RMDND
19 RPROG
40 WRTDAT
DIGVCC
DIGVCC
ANAVCC
14 PULPWR
17 IFCREF
18 IFC
16 VBOOST
43 RAWDATA
41 PDLN
15 FLTVCC
12 DIFFOP
13 DIFFON
10 FLTON
11 FLTOP
5 SIGIP
4 SIGIN
2 DIFFIN
3 DIFFIP
30 SIGPRST
37 PEAK
FLTGND
DIGGND
ANAGND
ANAGND
TP52
(10)
RAWDATA
TP104
(10)
PDLN
C146
1.0nF
R213
5.11K
R214
10.0K
R211
402
C144
10nF
R122
220
(14)
VACRF
R120
7.5K
1%
VCC
TP28
TP29
TP36
TP26
INTD+
INTD-
INT+
INT-
MRC1

FIG.118C

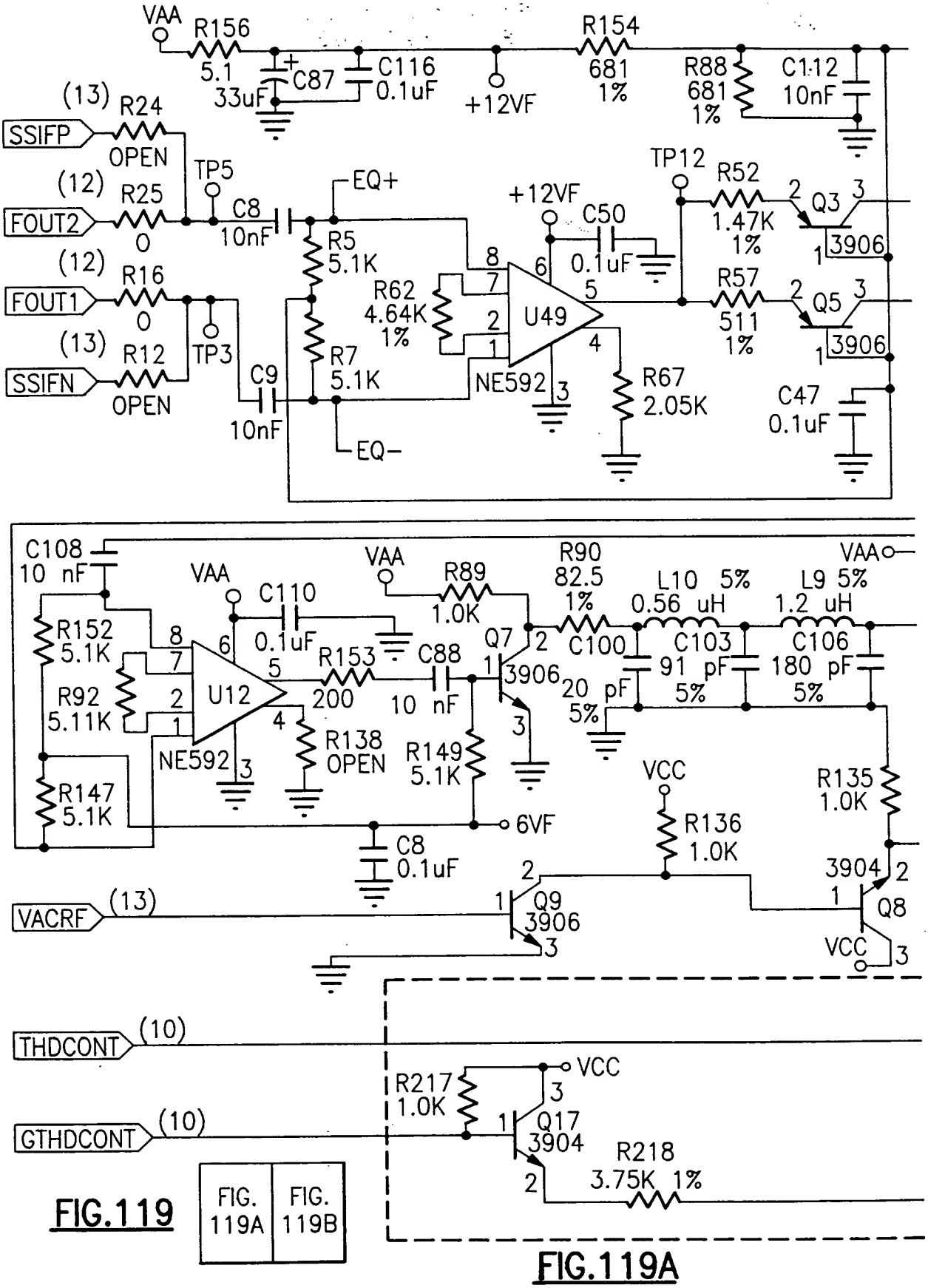


FIG.119

FIG. 119A	FIG. 119B

FIG.119A

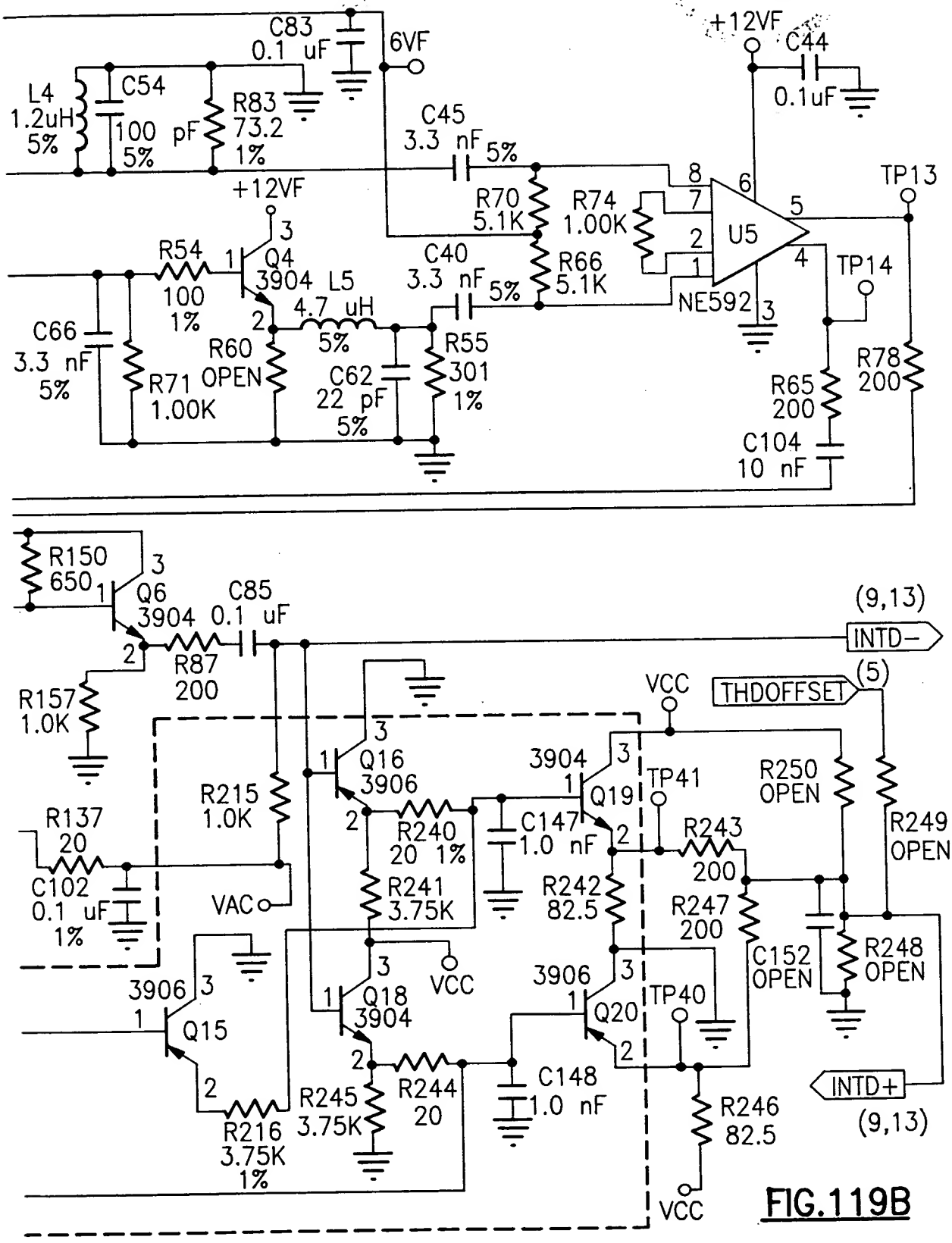

C83
0.1 uF
6VF
+12VF
C44
0.1uF
L4
1.2uH
5%
C54
100 pF
5%
R83
73.2
1%
C45
3.3 nF 5%
R70
5.1K
R74
1.00K
U5
NE592
TP13
TP14
+12VF
R54
100
1%
Q4
3904
L5
4.7 uH
5%
C40
3.3 nF 5%
R66
5.1K
C66
3.3 nF
5%
R71
1.00K
R60
OPEN
C62
22 pF
5%
R55
301
1%
R65
200
R78
200
C104
10 nF
R150
650
Q6
3904
C85
0.1 uF
(9,13)
INTD-
R87
200
R157
1.0K
VCC
THDOFFSET
(5)
Q16
3906
3904
Q19
TP41
R250
OPEN
R249
OPEN
R215
1.0K
R137
20
R240
20 1%
C147
1.0 nF
R243
200
C102
0.1 uF
1%
VAC
R241
3.75K
R242
82.5
R247
200
C152
OPEN
R248
OPEN
3906
Q15
Q18
3904
VCC
3906
Q20
TP40
INTD+
(9,13)
R245
3.75K
R244
20
C148
1.0 nF
R246
82.5
R216
3.75K
1%
VCC

FIG.119B

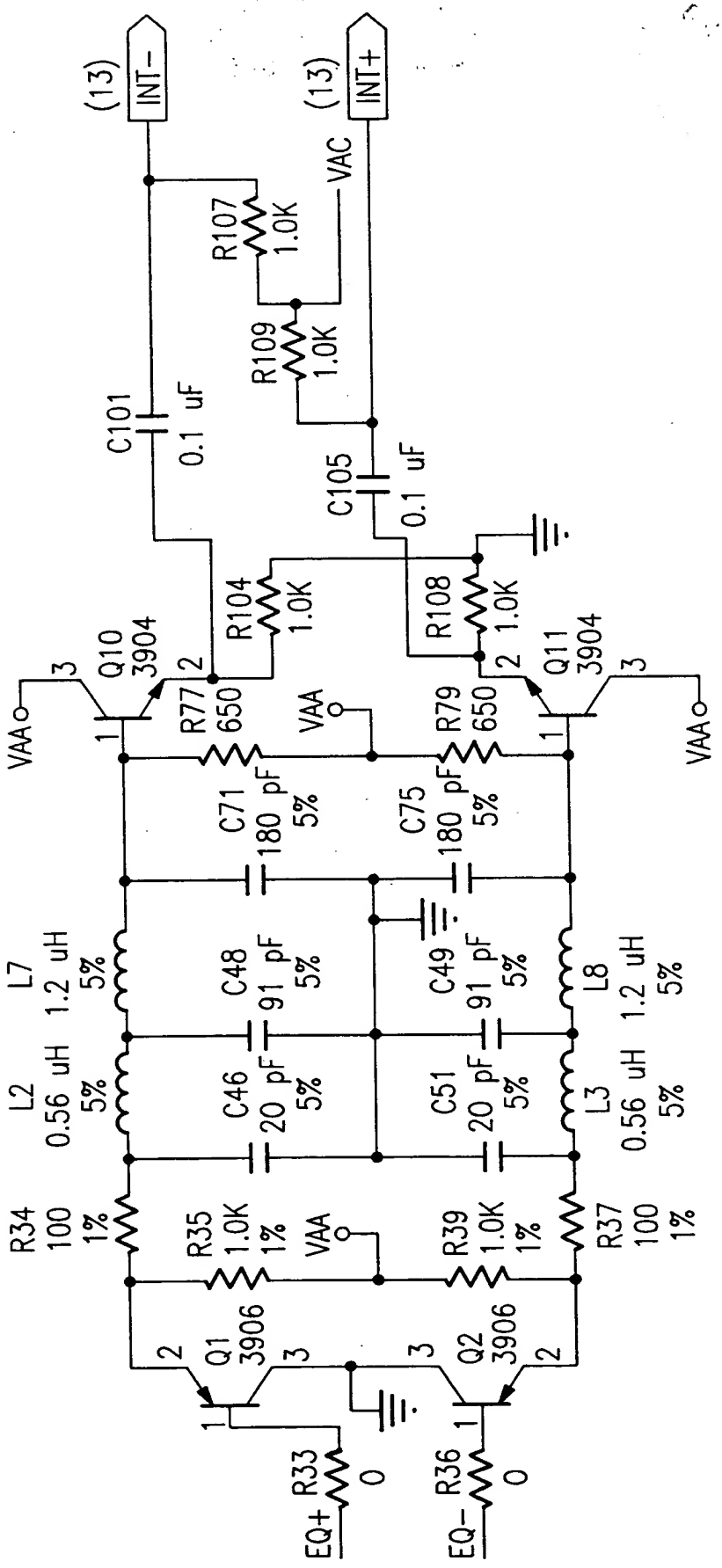

(13) INT-
(13) INT+
VAC
R107 1.0K
R109 1.0K
C101 0.1 uF
C105 0.1 uF
R104 1.0K
R108 1.0K
Q10 3904
Q11 3904
VAA
R77 650
R79 650
C71 180 pF 5%
C75 180 pF 5%
L7 1.2 uH 5%
L8 1.2 uH 5%
C48 91 pF 5%
C49 91 pF 5%
L2 0.56 uH 5%
L3 0.56 uH 5%
C46 20 pF 5%
C51 20 pF 5%
R34 100 1%
R35 1.0K 1%
R39 1.0K 1%
R37 100 1%
Q1 3906
Q2 3906
R33 0
R36 0
EQ+
EQ-

FIG.119C

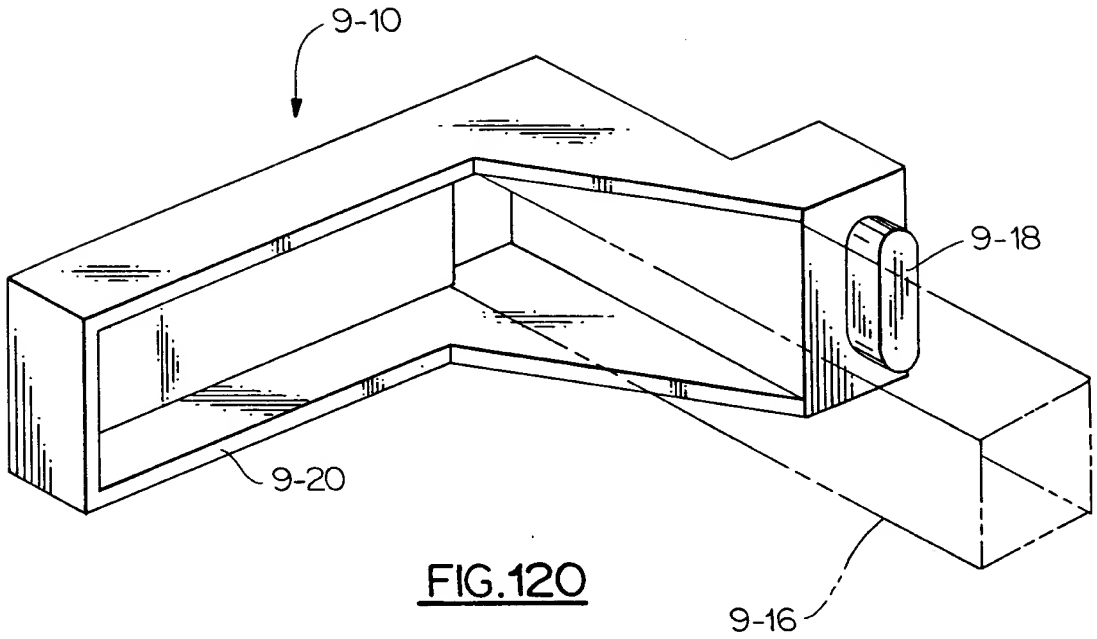


FIG.120

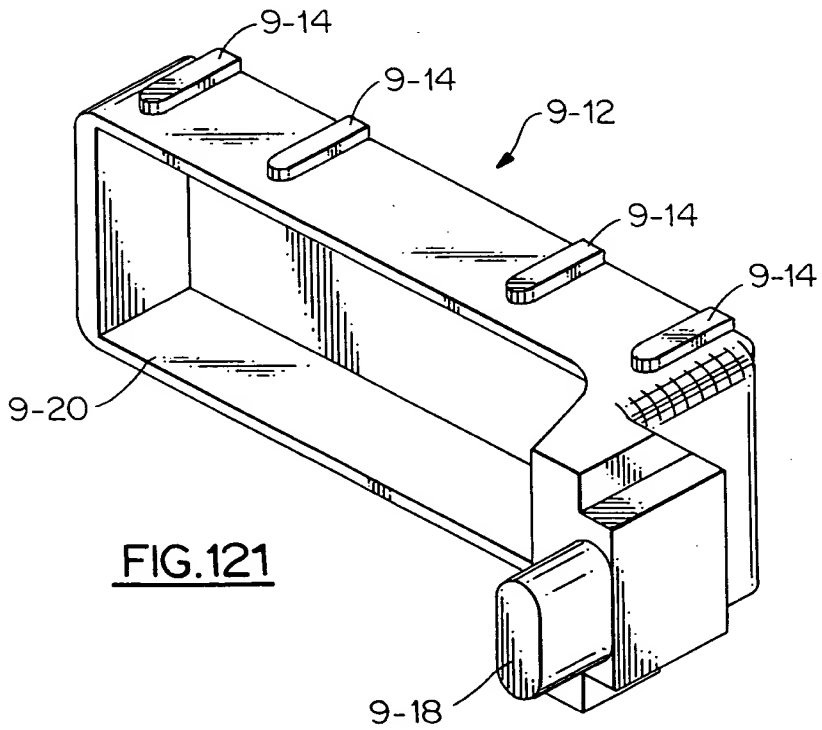


FIG.121

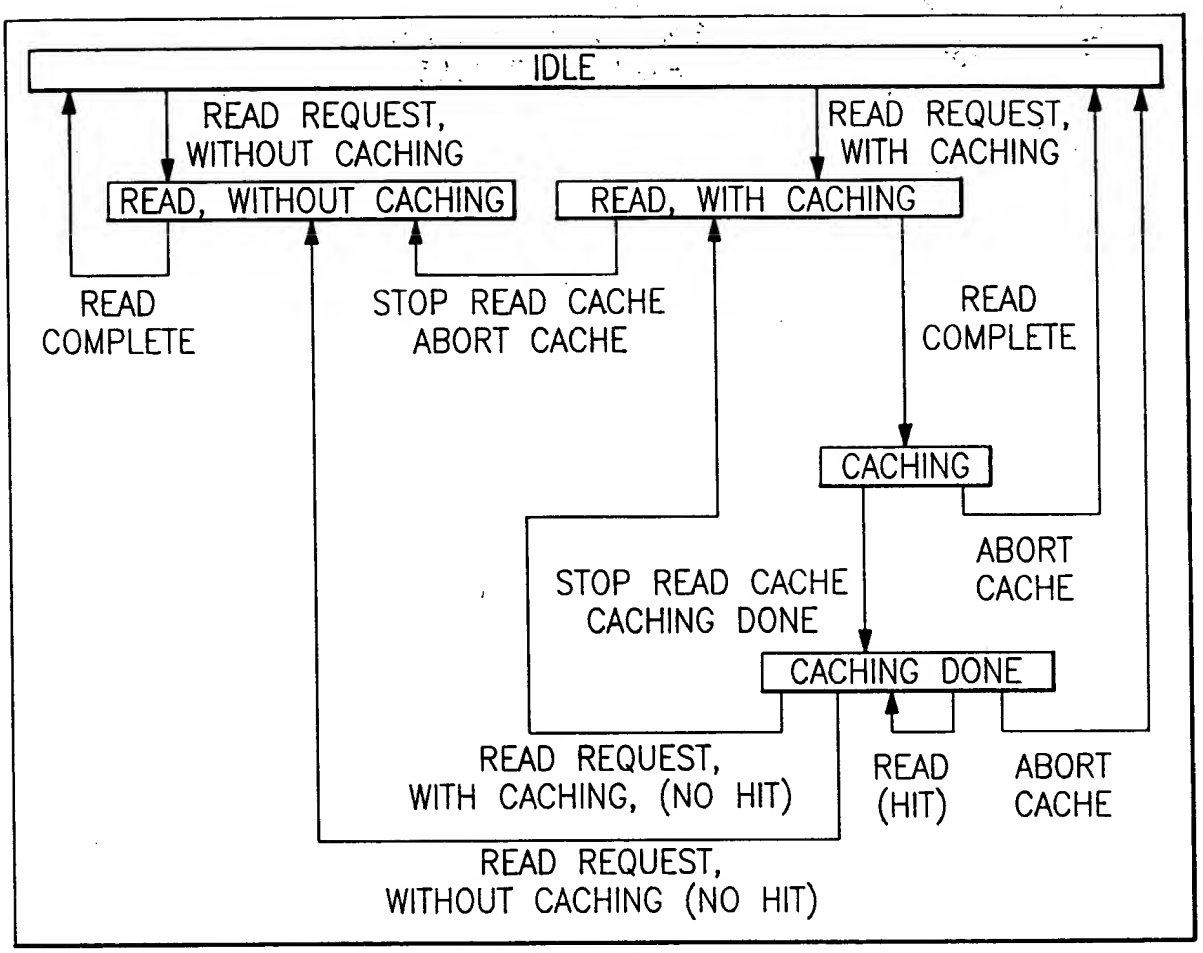


FIG.122

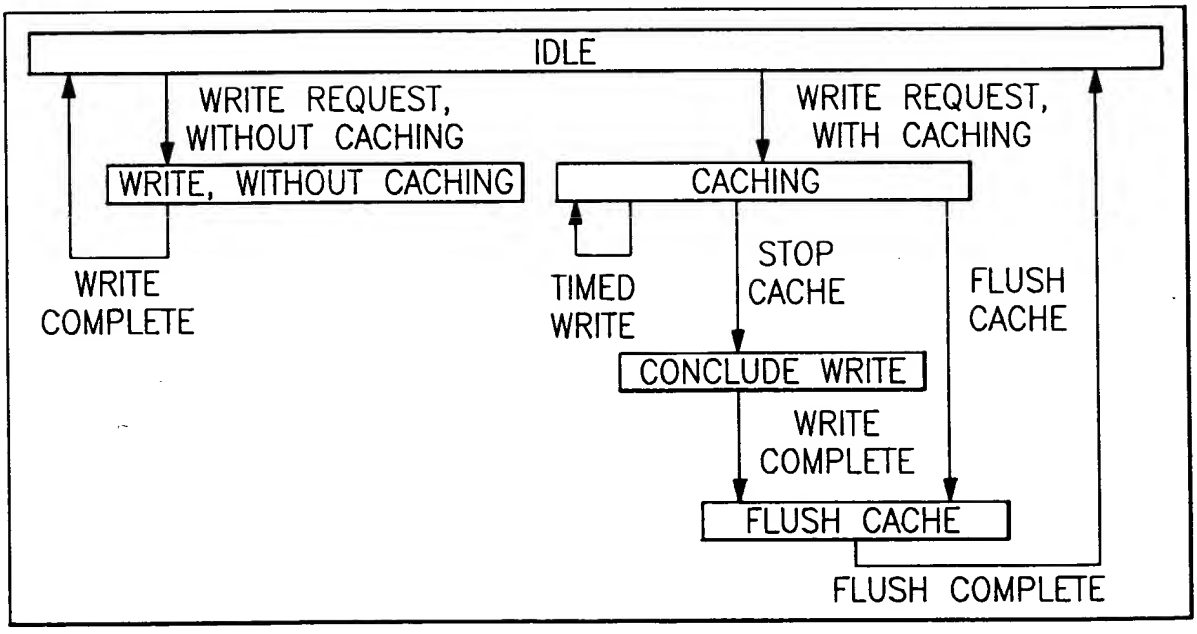


FIG.123

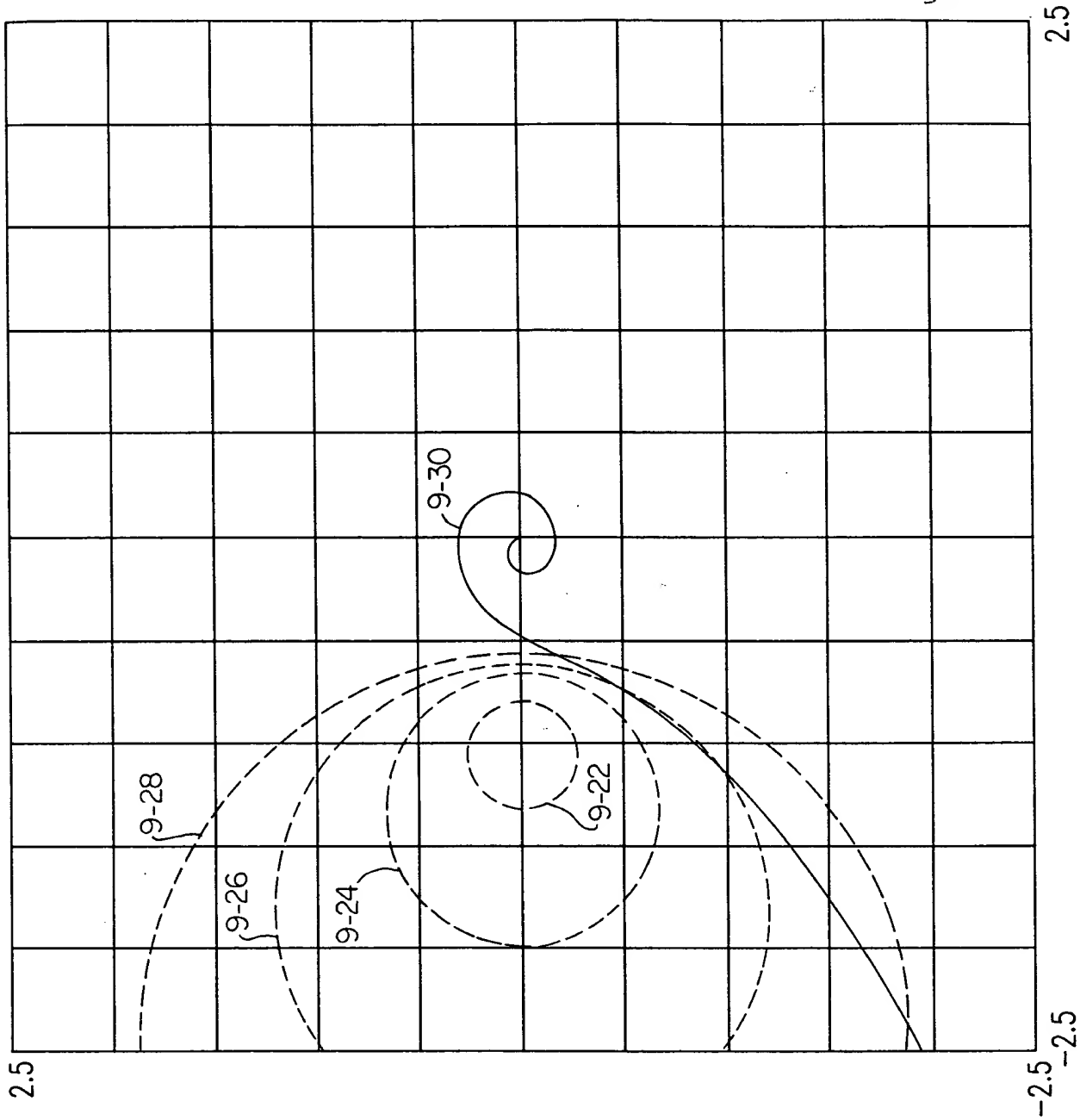


FIG.124

FIG.125

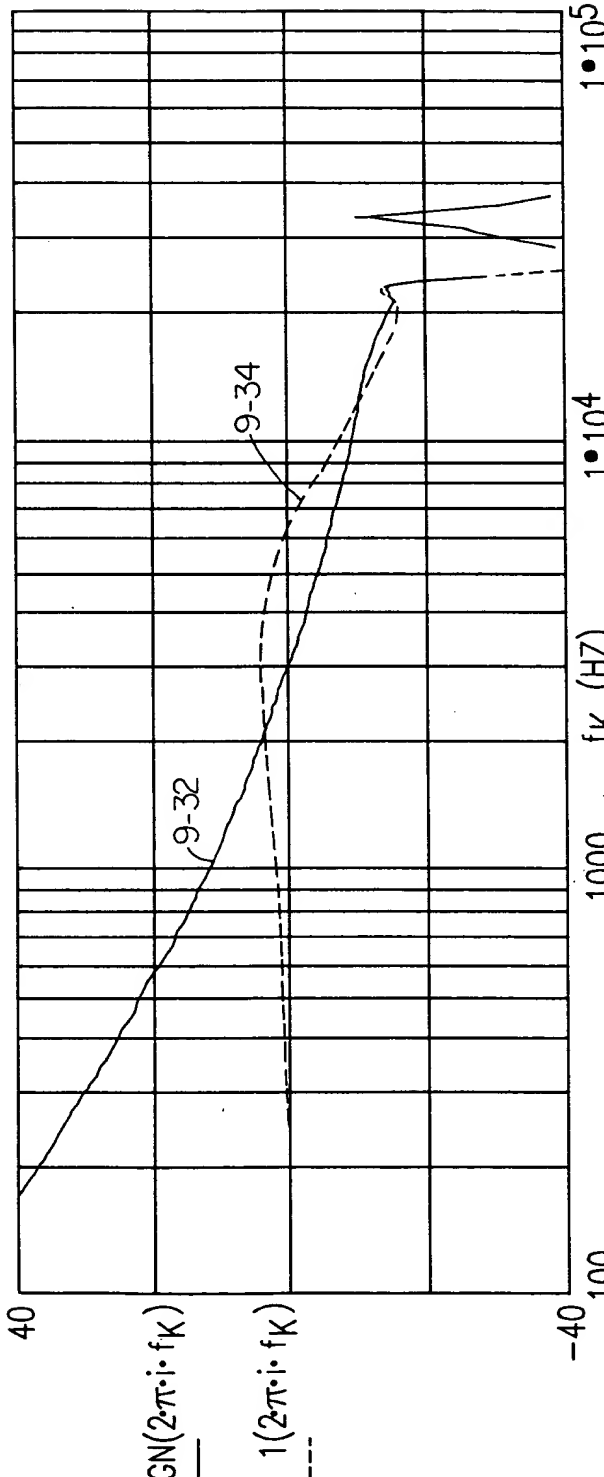
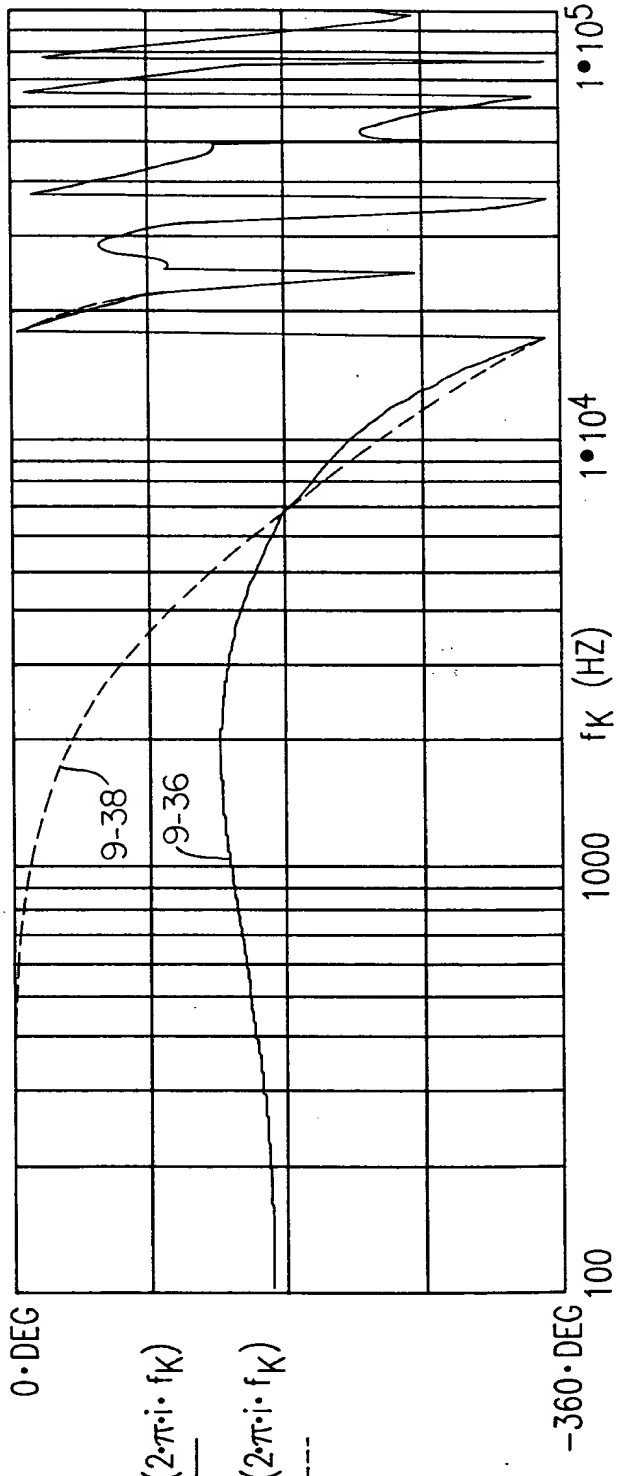


FIG.126



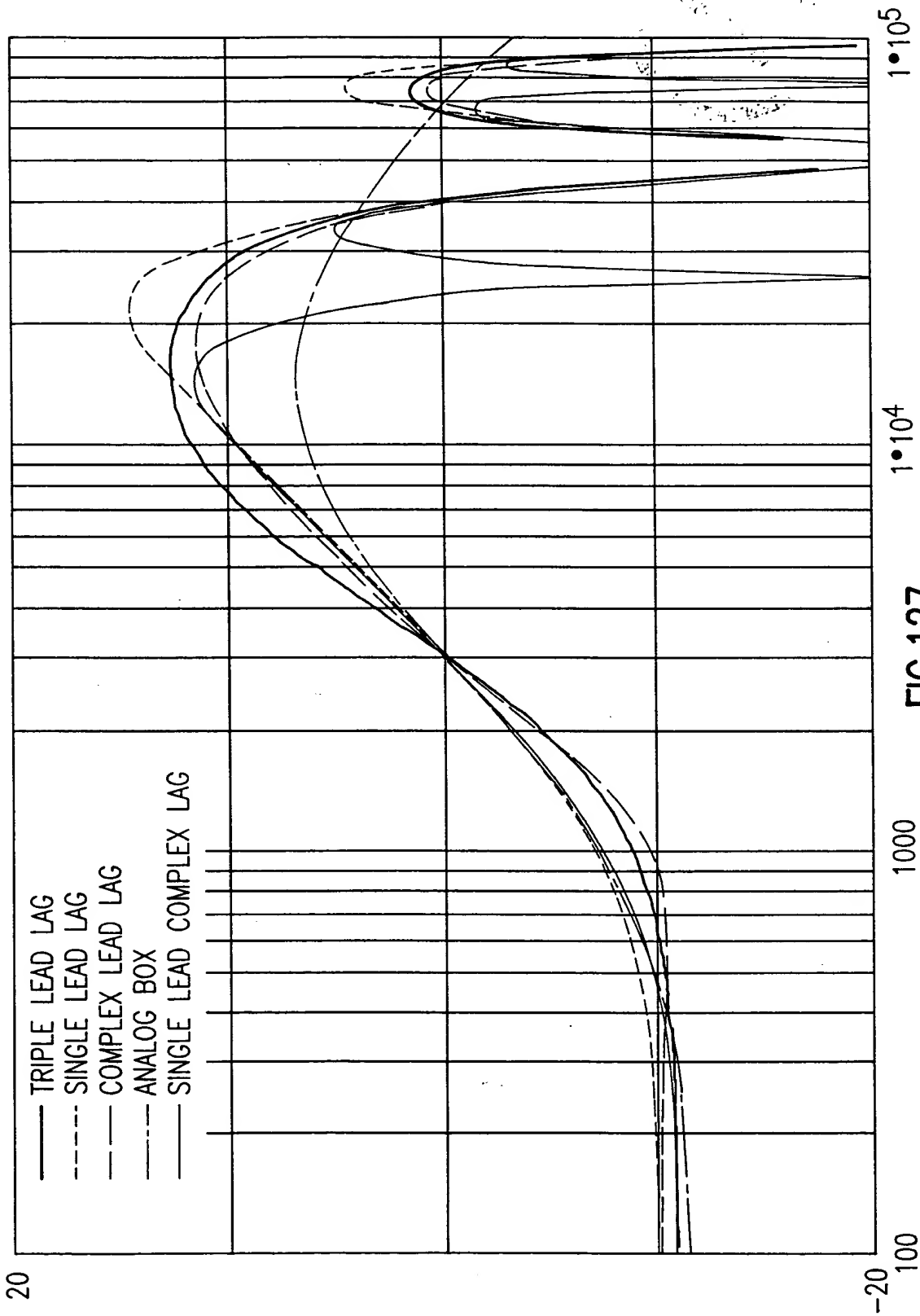

TRIPLE LEAD LAG
SINGLE LEAD LAG
COMPLEX LEAD LAG
ANALOG BOX
SINGLE LEAD COMPLEX LAG
20
-20
100
1000
1•10^4
1•10^5

FIG.127

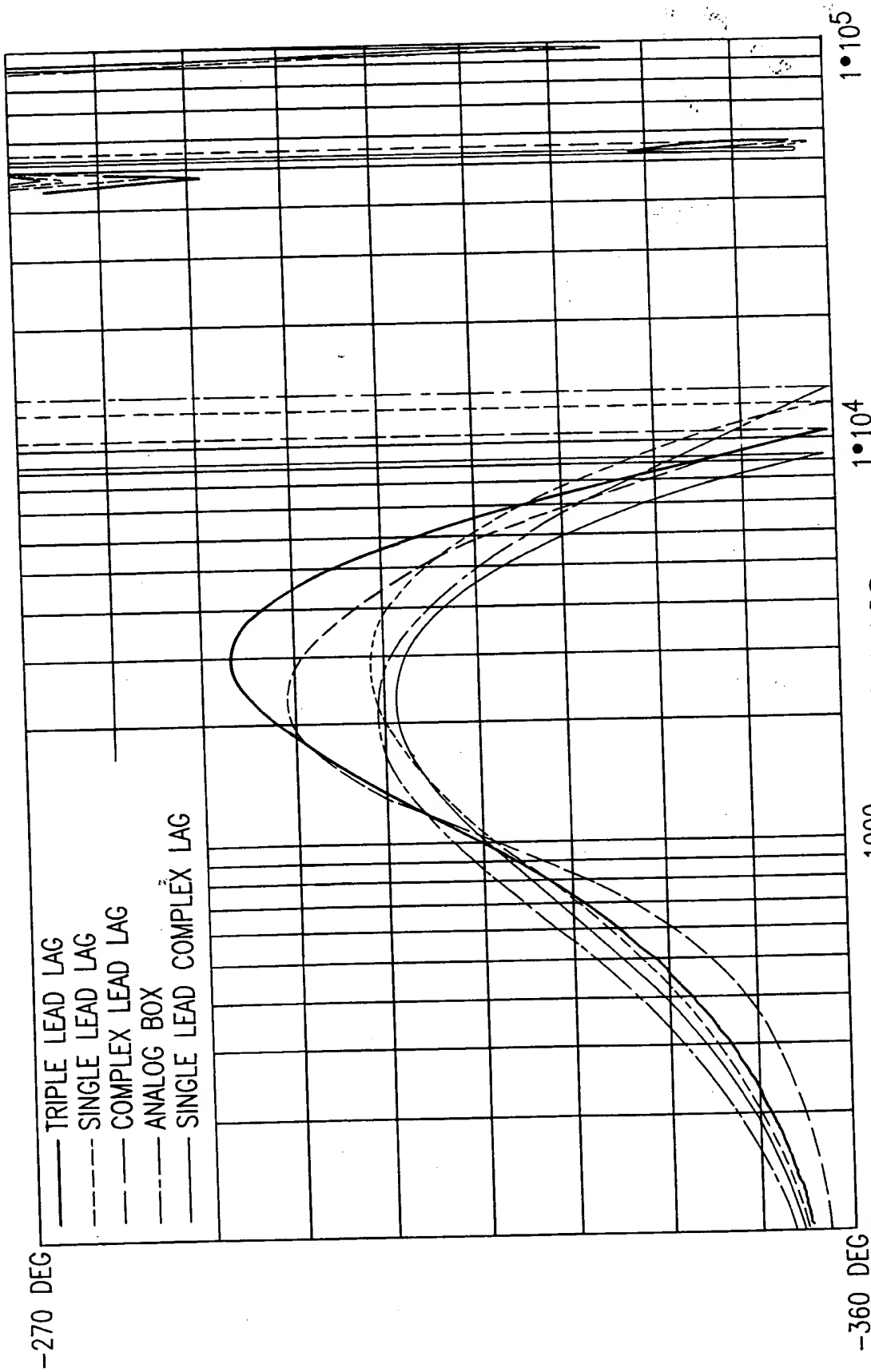

TRIPLE LEAD LAG
SINGLE LEAD LAG
COMPLEX LEAD LAG
ANALOG BOX
SINGLE LEAD COMPLEX LAG
-270 DEG
-360 DEG
100
1000
1•10^4
1•10^5

FIG.128